DOCUMENT RESUME

ED 066 363 SO 002 614

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TITLE The Development and Field Testing of a Pilot Program in Environmental Education in the Sedro-Wooley School District. Final Report.
INSTITUTION Western Washington State Coll., Bellingham. Huxley Coll. of Environmental Studies.
SPONS AGENCY National Center for Educational Research and Development (DHEW/OE), Washington, D.C.
BUREAU NO BR-0-0848
PUB DATE Dec 71
GRANT OEG-0-70-5039
NOTE 84p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Curriculum Development; *Ecology; Elementary Grades; *Environmental Education; *Inservice Teacher Education; *Pilot Projects; School Community Relationship; Secondary Grades; Social Values; Teacher Seminars
IDENTIFIERS Sedro-Wooley Project

ABSTRACT

This report covers the first year of the pilot program described in SO 002 228. The basic objective of the project is exploration of the meaning of environmental education at the community level. It aims at a K-12 environmental curriculum that is sequential, integrated, holistic, process-, field-, problem-, and community-oriented, and initiated through in-service teacher education. A year-long teacher training workshop consisted of five parts: Entry, Environmental Perception, Attitudes and Values, The Educational Environment, and Environmental Education Curriculum. Participating teachers wrote curriculum packages embodying their concepts of environmental education in their respective subject areas. The effect of the training program on teachers was monitored with a pre-post test, also given to a control group, which showed a change in the experimental group's values towards idealism and humanism. Efforts were made to involve the community in the public school aspect of the project. It was concluded that the critical element of district level curriculum revision is teacher training, that specific qualities of the environmental education curriculum can be identified, and that these qualities are difficult to attain because of the present organization of the educational environment. Further work on the problem is recommended. (Author/SJM)

ED 066363

OE-NCERD
SO
PROJECT

HUXLEY COLLEGE
CENTER FOR ENVIRONMENTAL EDUCATION

Final Report

Project No. 0-0848
Grant No. OEG-0-70-5039

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SD 002 614

THE DEVELOPMENT AND FIELD TESTING OF A PILOT PROGRAM IN ENVIRONMENTAL EDUCATION IN THE SEDRO-WOOLLEY SCHOOL DISTRICT

December 1971

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Office of Education
National Center for Educational Research and Development

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ABSTRACT

The Sedro-Woolley Project is an exploration of environmental education at the school district level. It aims at development of curriculum and method in environmental education initiated through in-service teacher education. The goal is a K-12 environmental education curriculum that is, in its initial stages, integrated into traditional subject areas rather than separated from them.

A group of teachers worked in a year-long training workshop which was developed in five parts: Entry, Environmental Perception, Attitudes and Values, The Educational Environment, and Environmental Education Curriculum. Participating teachers wrote curriculum packages embodying their concepts of environmental education in their respective subject areas. Qualities of the environmental education curriculum were identified and incorporated into these packages, of which a limited number of copies were published. The effect on the teachers of the training program was monitored with a pre-post test control group design which showed a change in values in the experimental group toward idealism and humanism and away from both a theoretical (scientific) and economic orientation toward life. Efforts were made to involve the community at large in the public school element of the project. It was concluded that the critical element of district level curriculum revision is teacher training, that specific qualities of the environmental education curriculum can be identified, and that these qualities are difficult of attainment because of present organization of the educational environment. Further work on the problem is recommended.

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I. BACKGROUND OF THE PROJECT

The basic objective of the project reported upon here is exploration of the meaning of environmental education on the community level. The project was originally conceived to span several years (as it will, though a problem of financial support has slowed progress after the first year). Consequently, this final report is in the nature of a progress report in that the objectives of the project have not been met in the span of the one year of effort being described here. The reader is requested to view the ideas and materials presented as purely developmental, as a step toward understanding the meaning of environmental education to a community.

The community which is the focus of the project is Sedro-Woolley, Washington, a community of 4,598 located in the Skagit River Valley of Western Washington State. The project was conceived by a group of teachers within the school district and by the staff members of the Northwest Environmental Education Center, a Center which has for a number of years been pursuing the task of developing a program of environmental education for the northwestern part of Washington State. This Center, which at the writing of this report has become part of the Huxley College Center for Environmental Education, seeks to develop a regional program that might serve as a model for similar programs around the state. Center staff, in their regional planning, realized that one element of the problem of "How do we serve the region through environmental education?" was "What are the needs of local communities, and particularly of local school districts?" Their search for a way in which to explore this question focused their attention on the Sedro-Woolley School District, which, in the spring of 1969, had demonstrated considerable interest in and support for environmental education. A teachers' group in the district formulated a series of environmental education objectives which they presented to the School Board and which the Board adopted as District objectives. The objectives to which the District committed itself are as follows:

A graduate of the Sedro-Woolley Schools should:

1. Be aware of the dangers inherent in the population explosion.

2. Be aware of man's dependence on nature for all the necessities for physical survival, and be aware that man is the only creature capable of consciously altering his environment.

3. Value a quality environment over the immediate possession of material goods and be aware that the production of material goods is dependent on the quality of the environment.

4. Be aware that an esthetic environment is essential to man's social and mental well-being.

5. Accept personal and individual responsibility for maintaining and restoring quality in his environment.

6. Be aware of legal and political avenues through which these objectives can be attained.

Along with these objectives, the leaders of the environmental education interest group were pursuing personal projects that indicated commitment to environmental education. Among these were development of media resources for environmental study, the planning of an environmental resource center, and instruction for teachers in environmental issues (offered by District teachers in cooperation with Western Washington State College). All of these district activities led to selection of this community as the experimental location in which to explore in depth the problem of environmental education at the local level.

The project was initially designed to approach the problem on several tracks:

1. The synthesizing of environmental education concepts.

2. The design of a school district staff improvement and development program in environmental education.

3. The development of curriculum packages for environmental education.

4. The development of ways and means of evolving a community commitment to environmental education.

This report will recount how work is progressing on these various tracks. It deals primarily with objectives (2) and (3) because these objectives have been pursued with a greater degree of success than the other two. Project staff found the task of synthesizing concepts one that could not be carried to any conclusion in the time span of the project being reported here. A "task force" comprised of people in a number of occupations from the Northwest Washington region was asked to comment on the Sedro-Woolley objectives from their various points of view. Their comments were to be synthesized into conceptual material for environmental education. The comments solicited were not suitable for completion of the objective and consequently more effort will be necessary to carry out this objective. Work on this task will be ongoing.

The community commitment objective was not adequately pursued. Project staff felt that it would be most effective to first achieve momentum in the schools and then move to the community effort. Consequently the community phase of the project remains to be carried out. A newspaper column in the regional newspaper, written by the Project Director, and numerous speaking engagements at meetings of local organizations by the Project Director and student groups comprised the community commitment part of the project. More details of this work are recounted in the "dissemination" section of this report.

II. TEACHER EDUCATION

INTRODUCTION

A major objective of the project is the transformation of the public school curriculum to attain environmental education objectives. Very early in the exploration of this problem it became evident that the key to such transformation lay in retraining of teachers. Review of learning materials in use in public schools revealed that there is a considerable body of environmentally significant learning method and material available to the practicing teacher. A number of teachers use this material, but it became evident that in the Sedro-Woolley District application of such material on the scale and in the manner traditionally practiced would not be sufficient to attain environmental education objectives. There seemed to be a need to develop in the teacher a new perspective toward the environment, especially the educational environment, and toward his place in that environment. Development of this perspective might lead to more effective application of "conservation education" and "outdoor education" materials and methods, and might lead the teacher to recognize the environmental nature of all teaching and learning.

It is hypothesized that the classroom teacher needs an "ecological conscience" and "environmental perspective" if he is going to teach his subject area in an environmentally positive manner. He needs to be a person who is concerned about the world in which he lives, about the young people with whom he works, and about his own future and that of these young people in this world. The challenge of a teacher-training program leading to realization of the environmental education potential of the teacher is to stimulate in that teacher a high level of social concern and awareness. The assumption behind this view is that social awareness will lead to ecological and environmental awareness, because man the social organism is also man the biological organism and reduction in the quality of life in one realm is being felt in the other. In short, if a man becomes concerned about the future of his family, his community, and his descendents, he will have to look to the environment as the context of this future. In so doing, he will grow in environmental awareness and, hopefully, his conscience will grow along with his awareness. Growth in conscience will lead to change in behavior and, in the case of the teacher, to change of behavior in the classroom. It will lead to scrutiny by the teacher of his subject area, his methods, and his personal goals and objectives as a teacher. He may begin to transform his curriculum into what we would call environmental education.

A major part of the effort leading to evolution of an environmental education curriculum at the district level was the development of a teacher-training program aimed at raising the level of concern in the teachers participating and then channeling this concern into modification of their curriculum. Such a training program was developed, it was administered to the Sedro-Woolley teachers participating in the project, and its results were evaluated. It was demonstrated, through use of psychological testing

instruments and a control group, that the level of social awareness and concern was raised by the training program. (See the report by Lunneborg and Lunneborg in Appendix D.) The teachers applied this new concern and awareness to their teaching and developed learning methods that are documented to some degree in the curriculum packages they produced, which are appended to this report (Appendix C).

The teacher-training program consisted of five main parts, all of which will be described in some detail here. This program was initially developed and tested with the Sedro-Woolley group of teachers. Work on the program is ongoing, and what is presented here is derived not only from work with the Sedro-Woolley group, but with a group of teachers and undergraduates in a Summer Institute conducted at Huxley College, and with two other groups of teachers and undergraduates at Huxley during the fall of 1971. (The basic format and framework of the program was developed in Sedro-Woolley and has only been expanded in later efforts.)

The teacher-training program consists of five parts:

Part 1: The Entry Phase. Here the environmental problem to which environmental education is a response is briefly presented, then questions of definition and of the scope of environmental education are raised. Why are we here and what do we think we ought to do?

Part 2: Environmental Perception. What do we perceive in our environment? How do our perceptions differ from those of our fellows? What do our perceptions have to do with environmental problems, with problems of the learning situation? How did we learn our perceptual habits? How do we teach the youngsters with whom we work to perceive their world? Many questions are raised in this phase.

Part 3: Attitudes, Values, and Environment. We can identify attitudes, values, and behavioral premises that are contributing to our environmental problems. What are some of these, how do they operate on our personal behavior, how are they operative in our society and in our educational environment? What are attitudinal and valuative alternatives? How may these alternatives be programmed into the educational environment?

Part 4: The Educational Environment. In this phase we analyze the environment in which the most intense learning experiences of life are expected to go on. What alterations in that environment seem advisable in view of increased awareness of the importance of perceptual sensitivity; of increased understanding of the operation of pathogenic values, attitudes, and premises in the educational environment; and of the evolving definition of environmental education? We examine the environment and propose concrete alterations that we can work toward.

Part 5: The Environmental Education Curriculum. This phase is a review of what is being done today in curriculum development for environmental education. Does it seem adequate or inadequate? What

directions for curriculum development are indicated by the analysis of environmental education just carried out? Insights gained are applied to revision of the curriculum.

These are the major elements of the teacher-training program that were developed. This program is by no means complete or inclusive of all that project personnel feel should be done in attacking the gigantic task of revising the means by which a person learns to relate to his environment. Elements of this program will vary with the geographic locality in which it is offered, with the level of knowledge and experience of the teacher group involved, and especially with the facilitator who seeks to bring about the retraining of the teacher group. The work that has been carried out in this project indicates that attack on the problem of environmental education will have to be multidimensional. There is no single answer. Simultaneous efforts with teachers, students, parents, community leaders, educational administrators, and many other groups will be necessary for any effective environmental education objectives to be reached on a significant societal or even school-district scale.

It should be noted at the outset that the group of teachers involved in the training program about to be described are all volunteers who, by their interest in participating in the program, demonstrated a high level of concern about their environment and about their role as environmental educators from the start of their involvement in the project. No effort was made to recruit teachers from particular grade levels or subject areas in the district. All teachers were invited to participate and the twenty-five who were finally involved were selected on the basis of their response to a questionnaire and personal interviews by the Project Director. The Director sought people genuinely interested in the goals of the project and sought to eliminate those who wished to participate merely for the college credit and potential salary increases that would result from their work. Twenty-one of the teachers came from the Sedro-Woolley District, and four came from other districts. The four "outsiders" were brought in for the slightly different perspective that they might be able to add to discussion and in the spirit of sharing what was happening in this one school district with neighboring districts.

The training program outlined here is the product of many people. The Project Director served as facilitator, as "teacher" of the teachers, but he did not create the approach described here. Rather, he conceived ideas as to how to approach the training problem, tried them out on the teacher group, and encouraged feedback from the group. When a method attempted by the facilitator was not effective he usually heard about it and modified or rejected the method according to the recommendations of the group. It is important to note also that the workshop through which training occurred was truly a "learning together" situation in that the facilitator was exploring the matter of what environmental education was and should be for him, even as he was encouraging the teacher group to participate in this exploration. This is a very important point. Workshop participants entered the workshop expecting a "traditionally" structured experience complete with grades, papers, teacher direction, and

perhaps even tests. Such structure was not imposed. The insights of Rogers[1] were applied and the workshop became a case study in educational method in itself. (See Entry Phase handouts, Appendix A.) The "teacher" of the workshop tried not to function as the authority and to "teach," but tried rather to be a co-investigator, learning along with other members of the group. This "learning together" is exactly what happened and the approach made it necessary for the teachers themselves to think through a lot of the questions raised in the workshop. The facilitator imposed general organization on the proceedings by coming to each meeting with direction in mind, but the participants had to grapple with the raising and answering of significant questions. Participants found this process rather frustrating in the short run, but effective in the long run. Everyone did not respond well to the approach, but the later products of their workshop experience indicate that for most participants the approach was ultimately stimulating. One teacher finally vented his frustration explosively after almost six weeks in the project, noting that he did not know where we were going, if indeed we were going anywhere. This led to considerable discussion with other members of the group expressing their frustrations as well as their ideas as to where they felt the workshop was going. Out of this heated exchange came a better group feeling and a clearer picture of what the whole effort was all about. The facilitator had attempted to explain at the outset of the workshop what it was all about, but ultimately each teacher had to decide for himself what the project was to him. It was not possible to force this understanding onto the people involved. The dynamics of this process of understanding vary with the individual and will vary with the group. The facilitator could do little more than do his best to create a workshop environment that was positive and reinforcing and that raised critical questions, focusing on the importance of the concept "environmental education."

THE TRAINING PROGRAM

An outline of the important elements of the program are provided here as a general guideline for others wishing to experiment with teacher training for environmental education. The content, methods, and resources of the process will be described briefly. (It is not possible to detail completely the process that developed the method because such delineation would be overly long and tedious.) Methods and ideas that did not bear fruit are not included in description of the process. What follows is a recommended program of training patterned on the initial Sedro-Woolley developmental method and elaborated in subsequent training efforts.

The Entry Phase

Objectives

- To review the environmental situation that has led to the interest in the concept "environmental education." That is, to review the need for environmental education, to establish a baseline of agreement that there is a problem to which the educational system, among others, must respond.

- To acquaint each member of the group with his fellows by sharing of expectations and goals.

- To review that which has preceded environmental education and which has been called by other names like "outdoor education," or "resource education," and to place these educational efforts of long standing in perspective to the concept environmental education.

- To enable the participant to perceive the social context of environmental education, as well as its other parameters.

- To provide the participants with an opportunity to work with definitional problems of environmental education, especially with the definition of environmental education as "all education."

What Was Done

The first step was to discuss "the problem," to try to reach agreement that there is an environmental problem to which the educator must respond. A number of approaches to this have been successful. One way is to present a film that graphically illustrates the seriousness of the environmental crisis that is facing man today. One good film that serves here is 1985,[2] a film depicting the breakdown of American systems in the year 1985 as reported on evening television news. It covers much ground and the viewer cannot help but become aware that the photos that illustrate the problems in the film were taken in the present or in the immediate past. The film is followed by discussion during which various predictions of the future such as those of Willis Harman[3] and Jay Forrester[4] are presented. A review of local environmental problems is helpful here in bringing home to the participant the immediacy of the problem. It should be noted that many of the participants in the Sedro-Woolley workshop had taken part in a course presented earlier by two Sedro-Woolley teachers, titled "Trends and Issues in Environmental Management." This course had familiarized them with a variety of environmental problems.

This point in the project was a good time to find out what the participants thought the problem really was, and it was possible to examine these views by soliciting discussion on individual participant's goals and expectations of the workshop. It became apparent to the facilitator that participants felt that the problem was primarily in the realm of the biophysical. That is, people stated that the problem was "pollution" or "population" or "reduction in quality of life due to proliferation of roads and reduction of esthetically pleasing environment." Discussion led to agreement that these were serious problems in themselves, but that perhaps the basic problem lay hidden in the way people think, in the way people learn about the world and then behave in it. One man stated, when asked about his expectations, that

all he wanted to do was learn the facts of pollution and population and "such stuff" so that he could teach about these things. Generally, the group's expectations were that they would learn facts which they could then plug into their curriculum as they would facts and methods learned in any other course of study.

This probing for statements of expectations and goals by workshop participants provided an opportunity for people to begin to know each other. It is important that members of the workshop group become intimately acquainted with each other so that they will not feel hesitant to participate in discussion. This was accomplished at first through use of nametags and through breaking the large group (25) down into small discussion groups of four to six people each. Such small groups were utilized extensively throughout the workshop so that elementary teachers would mix with secondary teachers and so that science, social science, and humanities interests would come into contact. Most of the workshop sessions were held in various libraries and classrooms in the schools of the district. (In addition, it is well to come together socially early in the workshop, to relate in a situation where there is no overt compulsion to be "learning." The ease with which people interact is greatly enhanced by an informal environment away from the school.)

Discussion of expectations and goals brought the terms "outdoor education" and "conservation education" to the attention of the group. Many people expected the workshop to deal with methods of utilizing the natural world for learning; they were participating in the workshop because they had long been involved in outdoor education activities. The group concluded early that environmental education had to be more comprehensive than outdoor education, though they were not sure what they meant by that. One of the group objectives was thus formulated: to ascertain what environmental education could accomplish that its predecessors had not. (At this point a number of outdoor education methods and materials can be examined to point out their good and bad points. A paper by Clay Schoenfeld, "What's New about Environmental Education,"[5] also fits nicely into discussion at this stage.)

Questions about outdoor education versus environmental education lead nicely to the definitional considerations. There have been a number of attempts to define environmental education and they may be introduced here. These include the contributions of B. Ray Horn,[6] of the writers of the Environmental Education Act,[7] and of the participants in the National Conference on Environmental Education sponsored by the University of Wisconsin at Green Bay.[8] It becomes immediately apparent that definitions are of limited utility and that all of the definitions studied have both good and weak points.

The facilitator offered the following definition of environmental education to the group as a "working definition" that

could be critically studied as the group groped for its own operational statement of the problem. This definition was that "All education is environmental education." It derives from the homocentric definition of environment as the totality of surrounding conditions that affect the human organism or any other organism present in that context. That is, the environment is everything; everything is the environment. Education is broadly and simply defined as the process through which we obtain knowledge and understanding of this context, of this environment. Education is the process of learning about environment. "Environmental education" in view of this definition is somewhat of a misnomer. If indeed all education is environmental, the real concern is with what happens in the educative process that has gotten us into trouble with this environment that we have learned about. In short, where have we gone wrong in learning about the environment and what parts of the educative process need to be revised in order that we will behave in our environment in a less disruptive and more ecologically sound manner? That is the real problem of education, or of environmental education, to use presently accepted terminology. Definitions generally serve to circumscribe the boundaries of the concept or object being observed or described. The "all education" definition does not establish boundaries. It breaks down boundaries and places the entire educational process under the scrutiny of the environmentally concerned educator.

One further part of the introductory or entry phase might be dealt with before moving to the actual examination of the educational process and that is the societal context of education. It is important to demonstrate that the process of education does not occur in a vacuum. This seems an obvious point, but too often the teacher and the student in the formal educational institution do not think about the society in which their institution is operative. Two dimensions of this context were dealt with. The first was familiarization of the student with the history of "conservation" in America. Beginning with establishment of the Public Domain in 1785, the history of the man-land relationship in America was briefly reviewed. The writings of Roderick Nash,[9] Stuart Udall,[10] and Frank Graham[11] provide a good overview of this American conservation history, which was presented to the workshops in lecture format. The tracing of this dimension of environmental consideration grounds the participant in the history of thought and action about the American environment and demonstrates the evolution of concern and awareness of environmental dynamics in American history. It demonstrates the broadening scope of such concern and the momentum it has been gaining in the recent past.

The second element of context that should be dealt with is that of American society itself. The work of Charles Reich,[12] Theodore Rosczak,[13] and Harman[14] are brought to bear here. Discussion at this stage points out that problems of technological

growth, corporate power, bureaucratic proliferation, population growth, poverty, and many other social ills are all really one large and interrelated "environmental" problem, and that the process of education has been and is now operative in the context of all of these problems. The complex interrelatedness of national and world systems becomes evident at this point. The hoped-for result of this discussion, building on the earlier exercises, especially the definitional exercise, is an understanding by workshop participants that the environmental problem which has thrown them together in the workshop is such a societally permeative one that very fundamental reorientation of thought is necessary if environmental behavior is going to be modified in such a way that the world can be "salvaged." Their simplistic perception of the environmental problem as "pollution" and of environmental education as "teaching about pollution" is hopefully shaken at this point. A statement by Nicholas Johnson may help to make this point.

> The headache remedy commercials are among the most revealing. A headache is often our body's way of telling us something's wrong. What is wrong may have to do with the bad vibes one picks up working in big corporations' office buildings or shopping in their stores. The best answer may be to stay out of such places. Obviously, such a solution would be as bad for the corporate state generally as for the headache remedy business in particular. So the message is made clear: Corporate jobs and shopping trips are as American as chemical additives in apple pie. You just keep driving yourself through both. And when those mysterious headache devils appear for no reason at all, you swallow the magic chemicals. . . . You have probably thought about television's phony values and their impact on society. But reflect: How many people do <u>you</u> know whom you think of as "fully functioning personalities"? How many are there in whose daily lives there is a measure of beauty, contact with nature, artistic creativity, some philosophical contemplation or religion, love, self-fulfilling productivity of some kind, participation in life-support activities, physical well-being, a spirit of joy, and individual growth? That's what the world's great theologians, psychiatrists, poets, and philosophers have been telling us human life is all about. But few of us have come close to realizing our potential.[15]

Workshop participants may begin here to realize that fundamental changes in education will have to be brought about if an effective program of environmental education is truly going to occur. This is not the point in discussion to suggest what these might be, but that is the task facing this group and many groups like it which will have to grapple with the creation of a viable environmental education in the coming years.

Workshop Timetable and Aids

Suggested Entry Phase Duration: Two three-hour sessions (negotiable with group).

Suggested Entry Phase Reading:

Harman, Willis W., "Alternative Futures and Educational Policy," Memorandum Report EPRC 6747-6, Educational Policy Research Center, Stanford Research Institute, Menlo Park, California 94025, February 1970.

Leopold, Aldo, A Sand County Almanac. New York: Oxford University Press, 1949.

Krutch, Joseph Wood, "Conservation is Not Enough," in The Best Nature Writing of Joseph Wood Krutch. New York: William Morrow and Co., Inc., 1970.

Entry Phase Handouts (see Appendix A):

Introduction
Discusses format, procedures, responsibilities; includes basic bibliography.

A Selection of Environmental Encounters
Examples of environmental encounters written by other students.

This entry phase is a very important part of the workshop. During this phase the participant is introduced to the problem and is given the broadest possible understanding of the complexity of the task that he and his fellows are undertaking. He is introduced to his fellow inquirers and to the facilitator, and his curiosity and dedication to the task are hopefully stimulated. It is probable that his expectations are somewhat shattered by the format, the definition, and the structure of the workshop. This is desirable, but the facilitator must be sensitive to the potential disruptive effect that this denial of expectation may have upon the group and upon individuals within the group. Feedback to the facilitator by the group is necessary in this phase, as in all others.

The workshop group must now begin exploration of the educative process in an attempt to determine what parts of that process need revision in view of the environmental crisis.

Environmental Perception

The Concept

The importance of environmental perception to the problem of environmental education was at first intuitively felt by the Project Director. The workshop group met in two different

rooms and the facilitator noticed the difference in effect that the space had on the interactions of the group. He became sensitive to the effect of different rooms on the functioning of groups and explored the literature of the subject.[16] At the same time, he was reading Aldo Leopold's Sand County Almanac which he had recommended to the group primarily because of its sensitive and unique expression of the land ethic idea. As he pondered the implications of the differential effects of space on behavior he read the following passage in Leopold's book:

> We come now to another component: the perception of the natural processes by which the land and the living things upon it have achieved their characteristic forms (evolution) and by which they maintain their existence (ecology). That thing called "nature study," despite the shiver it brings to the spines of the elect, constitutes the first embryonic groping of the mass-mind toward perception.
>
> The outstanding characteristic of perception is that it entails no consumption and dilution of any resource. The swoop of the hawk, for example, is perceived by one as the drama of evolution. To another it is only a threat to the full frying-pan. The drama may thrill a hundred successive witnesses; the threat only one--for he responds with a shotgun.[17]

This expanded the Director's concept of environmental perception and posed some very interesting questions. Why does one person perceive the hawk as a drama of evolution and another person view it as a threat? Is the difference perception learned? If so, how was this learned? Was it learned in school or outside of school? There were many other questions. The important point was that the noting of differences in habits of perception is one way of describing the differences in people's environmental behavior. The man who perceives the beauty of a pristine environment thinks longer about fracturing the beauty of that environment with a road than does the one who perceives the place only as a piece of land to be utilized for man's best use. There is a fundamental difference in perceptual behavior here.

Leopold's statement implies as well that one cannot perceive the drama of evolution in the flight of the hawk unless one knows something about evolution, and about the hawk. The person looking at the bird has to make a decision about it--either it is a good thing that he sees or it is not. His perceiver's personal configuration of knowledge and emotion, his perceptual framework, is the context for the decision-making process, and in many instances the decisions, based on personal habits of environmental perception, result in good or bad environmental effects. Thus it seems that education must search out ways and means of providing the learning population with certain elements of knowledge and emotion that will enable the individual to make decisions about what he

perceives that will result in a quality environment. The process of building this perceptual field is, of course, environmental education.

The workshop group discussed this matter of environmental perception at some length. It was noted that perceptual psychologists have stated as a basic axiom that all behavior is a product of the perceptual field of the behaver at the moment of action. How a person behaves, in other words, is an outgrowth of the perceptions existing for him at any moment.[18] People do not necessarily behave according to the "facts" as they may seem to an outsider. They react according to how things seem to them, as in the case of the birdwatcher or the hunter, both turning their attention in different ways to the same hawk. Their unique perceptual fields are operative at the moment of action. This points out that there may be a difference between facts (the hawk is in flight) and the meaning of those facts to the perceiver.

Transferring this idea to the educational environment, we may cite a case in point. A student is told in class, through the medium of his reading or a lecture that he hears, that pollution is bad. This is a demonstrable fact which the teacher proves by citing examples of deaths resulting from polluted air and water. The teacher, in the same lecture, may tell the student that litter is a form of pollution and that this is also bad, though its effects may not be fatal. The student duly notes this fact and later states in a test or other evaluative device that litter is bad. School is dismissed and the student heads for home, stopping in a store along the way to buy a couple of pieces of bubble gum. He leaves the store, opens his packages of bubble gum, and casually drops the empty packages on the ground. He knows that pollution is bad and that litter is a form of pollution but while he has mastered the facts of pollution and litter he has not integrated these facts into his perceptual field. He has not grasped the meaning of the facts as they relate to him. He has not learned that <u>his</u> litter is also pollution.

The implications of this are obvious. Environmental education must go beyond the processing of facts, though concepts and facts must be learned in order, for instance, for the student to see the "drama of evolution" in the flight of the hawk. The perceptual axiom implies, however, that education must go beyond the setting up of tasks to be accomplished and the assigning of subject matter to be covered. It implies that the meaning of the subject matter must be impressed upon the student in some way. The meaning of the concepts "pollution" and "litter" to the individual student must be pursued so that true learning in the form of changed behavior may occur. One of the challenges of environmental education must be the development of ways to help students to explore meanings of significant environmental concepts and facts and to see how they are operating in the student's environment. This insight into learning derived from perceptual

theory has extensive implications for educational methodology, some of which will be discussed later in this report in considering the educational environment.

Another element of perception that deserves attention is that of how well the individual is able to perceive his environment. There are many factors operating on a person's ability to perceive. Much has been written about how difficult it is, for instance, to listen. Conversation is often complicated by the presence of poor listeners. Most people, the students of listening habits affirm, are poor listeners. Perhaps the lifestyles that most people live today involve so many sensory stimuli that a large part of these stimuli are blocked out for the preservation of the person's sanity. Sound in the urban environment provides a case in point. The whole matter of factors operating on the person's ability to perceive his surrounding clearly and accurately is an extensive area of inquiry in itself that cannot be thoroughly explored here. Workshop participants were urged to pursue the topic if so inclined. Discussion of this element of perception led the group to the conclusion that assessment of their own abilities to perceive their environment would be valuable, and a number of perceptual exercises aimed at aiding the participant in analysis of his perceptual abilities were attempted. These are briefly described later in this report. The major objective of these exercises was to encourage the perceiver to concentrate on his perception of a number of environments in order that he might observe his perceptual capabilities and limitations. The group concluded that their perceptual skills were not very polished and that they were not as aware of the multiple dimensions of their environment as they thought they were.

An important point that must be stressed is that the teacher should analyze his personal position relative to environmental perception before he goes into the classroom and begins to talk about it or attempts to deal with it in his curriculum. He should try to increase his perceptual ability, his sensitivity to environmental stimuli, so that he can understand the difficulties that his students will experience when they embark upon this task. Self-analysis on the part of the teacher is really the key to the whole environmental education workshop being described in this report: Before the teacher can deal with environmental facts and concepts, perceptual questions, and other questions relevant to environmental education, he must deeply and carefully scrutinize himself as a functional organism behaving in the environment. The process of environmental education is a constant dynamic process which the teacher engages in right along with his students. If he has not examined himself very thoroughly and come to understand and appreciate the importance of increased perceptual skills in the integration of the meaning of facts into his own perceptual field, he will likely be ineffective in developing methods for the integration of the meaning of facts into the perceptual fields of his charges.

Consider the whole perceptual field idea in relation to the teacher. If a teacher seeks environmentally "good" behavior, an environmentally "good" perceptual field, then he must define what "good" is for himself. He seeks to develop an "ecological conscience" in his students. In order to do this he must have an ecological conscience himself which is exercised in his behavior and which operates in his personal treatment of environmental facts. If the teacher works to develop an environmentally adaptive ecological conscience in his students, he must be confident that he himself possesses and displays such a personal behavior controller. In his confidence he can relate to his students on the basis of "I am" rather than "I ought to be" and this will greatly enhance the effectiveness of his methods. He will not fall into the "Do as I say, not as I do" trap.

If analyses of environmental perception of the environmental education process as a whole result in a more ecologically responsible lifestyle, then display of such a lifestyle--the free and open sharing of the self with the others--seems the most effective educative tool that an environmental educator can possess. The perceptually acute teacher is one who is deeply aware of his world, who values the process of being so aware, and who will seek to share this sensitivity with his students. He will do all that he can to reveal the joy and satisfaction that his high perceptual abilities bring to his life. He will discuss the why of perceiving the world as clearly as possible, and will demonstrate the how in the way that he lives and teaches.

One Sedro-Woolley workshop teacher illustrates the point being made here. She thought about environmental perception in the context of the course and participated wholeheartedly in the personal exercises aimed at studying her own perceptual skills. She designed exercises herself, then she engaged her class in a year-long series of perceptual exercises, in the classroom and in the field, in the context of the teaching of creative writing. Toward the end of the year she collected the writings that her students had done and proposed that they create a multimedia presentation utilizing the students' writing, contemporary music, and a selection of her photographs of the positive and negative elements of the environment that she had perceived. Her students selected appropriate music from their collections, and matched these with slides they selected, to create a statement about the world and how they saw it. The end result, student-produced with the help of the teacher, was a significant experience for all who were exposed to it--fellow-students, teachers, parents, and especially the young creators themselves. This teacher loves music, photography, and creative writing, all perceptual fields of experience, and by sharing her perceptual enjoyment and skill, created a significant learning experience for her students.

The ideas being expressed in this discussion of perception are well stated by Lawrence Frank and J. Krishnamurti.

> If teaching is to be only the transmission of standardized knowledge, of objective facts and generalizations and the training of pupils in academic skills, then teachers will soon become obsolete, another victim of automation. But . . . teaching is essentially a series of interpersonal relations, of human communications which are intended, not primarily to transmit content, but to evoke in the recipient pupil the responses we call learning and to give the individual pupil confidence in himself for learning to learn.[19]

Krishnamurti points out that:

> The love of beauty may express itself in a song, in a smile, or in silence, but most of us have no inclination to be silent. We have not the time to observe the birds, the passing clouds, because we are too busy with our pursuits and pleasures. When there is no beauty in our hearts, how can we help the children to be alert and sensitive? We try to be sensitive to beauty while avoiding the ugly; but avoidance of the ugly makes for insensitivity. If we would develop sensitivity in the young, we ourselves must be sensitive to beauty and to ugliness, and must take every opportunity to awaken in them the joy there is in seeing, not only the beauty that man has created, but also the beauty of nature.[20]

Awareness of the importance to environmental education of environmental perception should lead to a teacher who strives to be as aware and sensitive as possible, who recognizes the presence of multiple perceptual fields in his group of learners, who recognizes that perceiving is a critical process in the larger process called education, and who is dedicated to helping his students master the perceiving process to their fullest potential.

Workshop Methods for Study of Environmental Perception

The Listening Experience. The purpose of this exercise is to isolate the sense of hearing and to force the participant to concentrate on the listening process. He is to listen attentively and to note his responses to the sounds that he hears.

A tape is prepared that consists of a number of short, contrasting musical pieces. The pieces should be selected to elicit varied emotional response. The following is one effective possibility:

1. Light classical piece (Debussy, "Claire de Lune"): evokes pleasant, calm response.

2. Cut from contemporary jazz-rock album (Chicago, "Progress"): "noisy, rapid, disturbing."

3. Heavy classical piece (Gabrieli, "Intonation for Organ on the First Tone"): "sacred, somber, church music."

4. A military march (Meacham, "American Patrol"): "armies, football games, parades."

5. Quiet, delicate piece, such as a piano sonata (Beethoven, "Sonata No. 8 in C minor [Pathetique]"): evokes peace, reflection, relaxation.

This exercise is given no introduction other than asking that people should relax, lie on the floor or otherwise get comfortable, and listen. The lights are completely blacked out, and the tape is played on a large sound system so that the music will envelop the listener. The tape should not exceed 30 minutes.

Group response to the exercise was positive in that extensive discussion of "Why do this," of the cultural loading of sound, of different responses to the same sound, of the difficulties of concentrating, and of the classroom potential of this type of exercise followed the listening experience.

The Visual Experience. Prepare a short sequence of visual perceptions in the form of slides. A variety of photographs is desirable, but any "message" in the sequence should be avoided. Use a maximum of 25 slides.

a. Show the sequence to the group, running rapidly through it, allowing three seconds per slide. Discuss the effect of the sequence on the group. What did they see? What did they feel? The general feeling, of course, is frustration at the speed. Can the group relate the frustration of the overly fast pace of visual images to daily activity?

b. Show the sequence again, this time allowing ten seconds per slide. Again discuss the effect of the experience on the group. What did they see, feel, recall. Were any of the images "loaded" for some people? Compare reactions.

Was there any "message" in the sequence? If so, the individuals write down the messages they received. The instructor then reads the messages to

the group. Comparisons are made and reasons for differences discussed.

Multiple Sensory Experience. A variety of experiences stressing the perceptual senses can be worked out with the group. Three such experiences are given.

a. The leader should familiarize himself with terrain in a natural setting and then take the group on a walk through the setting at night. He instructs the group to line up single file and for each person to place his right hand on the right shoulder of the person in front of him. All but the leader close their eyes, trusting the person in front of them to keep them on the path, and the leader takes the group on a walk through the chosen territory. He stops at various points and asks the group to listen, without moving, and to make no sound. This exercise should last approximately 30 minutes.

b. A variation on this experience is a one-to-one blind walk where one person is blindfolded and led around by his partner. The person leading directs the blind walker to touch and explore the world that he encounters. This exercise may be done anywhere, though it lends itself best to a natural setting such as a wooded area or field. This exercise is thoroughly described in Bernard Gunther's Sense Relaxation.[21]

c. The leader as a member of the group might prepare a slide-tape presentation on a topic of interest to him in which slides, music, and narration are coordinated. It is best if the leader makes the presentation and does so as a statement of his perception of his world, or a part of it, in the spirit of sharing his perceptions with the group. The group may discuss the effectiveness of the statement and its impact on them. Such a presentation should follow the listening and visual exercises.

Effects of Space on Group Activity. Every group with an educational objective initially organizes itself in rows, facing the teacher who is in the front of the room. Note this organization at the first workshop meeting. Thereafter, experiment with various learning environments and alternate arrangements of the space in these environments to illustrate the effect of spaces on the learning process.

a. The leader selects contrasting educational environments for group meetings:

1. A lecture hall in which fixed seats face front.

2. A library where ceilings are high and the space large.

3. An ordinary classroom with movable desks.

4. A comfortable living room in someone's home.

5. An outdoor setting.

An infinite number of possibilities exist. The leader may change as often as he feels is necessary to make the point that space has a lot to do with the mood of the group members individually and collectively, with the ease of interaction and comfort of the group members, and with relative effectiveness of the activities programmed in that space.

b. The leader may organize the classroom space in different ways, such as in rows, circles, or a number of separate small groups. After the first few meetings, the group is encouraged to assume responsibility for organizing their own learning space. The leader locates himself in various places in the group and occasionally brings group discussion to the effects of leader location and group organization on class discussion and interaction. What differences do members of the group perceive in interaction according to the various patterns that have been tried? What implications does this have for members of the group as teachers in their own classrooms?

Environmental Encounters. The workshop leader instructs the participants to write environmental encounter reports in which the person makes a conscious effort to record as completely as possible what he perceives in a particular environment. The purpose of this exercise is to force the perceiver to confront the multiple dimensions of any environment that he encounters. He can contrast his perceptual thoroughness in doing the exercise with his normal perceptual habits and may conclude that he needs to concentrate on becoming more aware of his surroundings and their effects on him. Examples of encounters are appended to this report (Appendix B).

Personal Journals. The workshop participants are urged to keep personal journals of their experiences in this confrontation with environment, with self, and with environmental education. They are asked to record as many as possible of their thoughts about and reactions to the activities of the workshop, to note parts of their reading that seem especially significant to them, and to otherwise keep a record of their growth that will be useful to them as a resource by which to gauge their growth and development as environmental educators.

Classroom Exercises. All of the above exercises are directed toward the workshop participant, the teacher himself. The real challenge, of course, is transference of the teacher's increased sensitivity and awareness into his teaching. Each person will have to apply his learning to his personal situation, but there are several exercises that everyone in the group attempted in applying skills and concepts in environmental perception to their classrooms.

a. In your classroom, or wherever you teach tomorrow, describe as thoroughly as possible the physical environment of that space. Inventory each of your senses carefully. Is it quiet, noisy, colorful, drab, cold, warm, close, fresh? Write a description of the room, if possible while students are present.

   Now ask the students to do the same thing. Be careful how you ask them. You do not want to bias the response. Compare their descriptions with yours and attempt to identify significant differences in the descriptions written from the different perspectives. Bring your papers to the next workshop class and share what you discovered with other members of your small group.

b. As in the first exercise, describe your classroom, but this time do not do so in physical terms. Describe the room as you feel it. What is your emotional response to the place right now. Concentrate on how you feel about it, on whether it is a pleasant place where you like to be, whether or not you are confident and feel good about what you are doing in this space. Do this also with students present and write your feelings down.

   Again ask your students to perform a similar exercise. Explain carefully what you wish them to do. Compare their responses to your own, and bring the responses to the workshop for discussion. (At lower elementary levels where students' writing skills are only slightly developed, some teachers used a cassette tape recorder to record the observations of their students. This method took time and resulted in a group response rather than a collection of individual responses, but led to a considerable amount of in-class discussion.)

c. Go to your classroom and examine the way you have organized the learning space there. Write down the organization pattern, indicating how the desks and/or tables are arranged and justifying the arrangement.

Now change it in some fashion. If your desks are lined up facing you, move them into a circle. Do you notice any changes in classroom behavior that you think may be a result of the change? Note these. After utilizing this arranement for several days, change it again. After students have had the opportunity to experience a number of different organizational patterns, ask them which one they prefer and why. This exercise may be carried to whatever length you wish and extensive discussions about spatial organization, interpersonal relations, and learning may be engaged in with students.

Small groups are mentioned in one of the above exercises. There were 25 members of the workshop in Sedro-Woolley and this number was often a bit larger when guests were present. To increase participation by workshop members in the process and to increase interpersonal communication, the large group was divided into four groups of five to six members for part of each workshop period and various issues and problems were discussed. The workshop leader encouraged these small groups to identify tasks which they as a group could pursue in bringing about district change toward environmental education but was unsuccessful. The groups added much to the workshop sessions but carry-over into the day-to-day round of district activity was not extensive.

The potential of small group exercises for examination of habits of interpersonal relations was not adequately explored in the workshop. It was noted, however, that while most workshop participants came from one school district, there was little communication between people and little awareness and understanding of each other's problems and aspirations. Extensive use of small groups, utilizing methods developed by NETL (Interpersonal Communication) might greatly increase group feeling and lead to greater perception of problems and dedication in pursuit of perceived solutions.

Workshop Timetable and Aids

Suggested Perception Phase Duration: Two three-hour sessions. (Exercises may be discussed in small groups over longer period of time).

Suggested Reading:

Hall, Edward T., The Hidden Dimension. New York: Doubleday and Co., Inc., 1966 (selected readings).

Hastie, Reid, and Christian Schmidt, Encounter with Art. New York: McGraw-Hill Book Co., 1970.

McInnis, Noel, "Gestalt Ecology: How Do We Create Our Space?" in Fields Within Fields...Within Fields, Vol. 2, No. 1, World Institute Council, 77 U.N. Plaza, New York, New York 10017.

Personal and Societal Values in Environmental Education

Societal Imperatives and Pathogenic Premises

Immediately after the workshop group had engaged in discussions of and exercises in environmental perception, a political scientist, Dr. David Clarke of Western Washington State College, addressed the group at their October 28 meeting. He profoundly affected the group's thinking. He pointed out that the school children of today will be in their late forties in the year 2000 and that education today is proceeding on the assumption that the future in which these people will live will be "just like today, only more so." He noted that this is a very dangerous assumption and that it is very unlikely that it will be borne out.

Clarke pointed out that we must live by new imperatives, by imperatives that environmental deterioration and new knowledge of ecology and systems are impressing upon us. These imperatives may be viewed in our society as "subversive," because they will motivate change in the present value system that predominates in America. Clarke listed the following imperatives:

a. Population may not go on increasing.

b. A "principle of frugality" must be adhered to on a national and world scale. A lower level of consumption must be arrived at as a matter of principle.

c. People must learn to experience nature as a part of themselves. One cannot learn to care for nature unless one can experience it. Opportunities for all to experience nature need to be provided.

d. A steady-state economy needs to be attained. It is unrealistic and dangerous to seek perpetual economic expansion. Such perpetual growth is not possible.

d. New personality types need to be developed. There must be a shift from a predominant competitive-aggressive personality to a cooperative-nonagressive personality.

Clarke indicated that people in America today are faced with the critical necessity of revamping their values. The modern world generates a great volume of information with which a person is constantly barraged. Some elements of this information

reach the consciousness of the individual and the society and some do not. The screen through which this information passes is the personal or social value configuration, i.e., "What you let through is a function of what your values are."

Value revamping is as difficult as it is critical. People inherit value systems which have evolved over long time periods. Such values are learned in the many contexts that comprise a person's education. A number of deeply-seated values, Clarke pointed out, result in pathogenic behavior. That is, they result in behavior that is having a negative effect on environment. He identified a number of premises upon which men act that are identifiably pathogenic:

a. Reductionism. The whole is reduced to its parts in order that it may be understood. Behavior in the educational system based on this premise has resulted in a world view in which it is difficult to percieve wholes.

b. Man-man separatism. Men have come to view themselves as fundamentally separate, with no responsibility for each other. Separatism is operative in consumpiton of resources where no responsibility for future generations is recognized.

c. Man-nature separatism. Man does not view himself as a part of nature but rather views nature as the "enemy" to be subdued, dominated, and utilized.

d. Growth. Economic expansion is equated with economic health. (The equations here are that physical expansion equals growth and growth equals health.)

e. The nation-state is sacrosanct. The nation is the important unit of government and of allegiance, regardless of the demonstrable fact that environmental problems are worldwide and are not contained by national boundaries.

Clarke listed these as a few premises that have identifiably pathogenic qualities. He referred the group to Harman's paper, "Alternative Futures and Educational Policy," published by the Stanford Research Institute, for a more complete discussion of the points that he had made. He concluded his remarks on this subject by stating his feeling that the environmental problem was insoluble unless these premises and others with similar qualities could be changed. Any environmental education program must take a hard look at the incompatibility between the operative value system and the desired new values.

In this manner Clarke introduced a critical dimension of the problem of environmental education to the workshop group.

Even to this point many members of the group believed that environmental education consisted merely in presenting facts to students about population and pollution so that they would be aware of the problem. Clarke's ideas pointed out that while in one way population and pollution are problems, they are only symptons of deeper problems when viewed from the socio-psychological perspective that Clarke employs.

A number of tasks for environmental educators appear when looking at the environmental macroproblem from this perspective:

a. Identify the value system that is inherited.

b. Identify the environmentally pathogenic qualities of the value system as manifested in attitudes, behavioral premises, and behavior.

c. Identify an environmentally positive value system that is a viable alternative to the pathogenic system.

d. Identify the methods by which that value system can be inherited.

e. Identify methods by which the alternative value system can be conveyed to the population.

This is, of course, a task of gigantic proportions that no environmental education workshop can hope to carry out in its entirety. The workshop group was rather stunned by the immensity of the task as it appeared from this perspective. It was pointed out that accomplishment of the above outlined tasks on a societal scale would require time and concerted effort and that the group could only begin to humbly grapple with the task in their microcosm. They accepted this as their responsibility and turned to the task.

It must be stressed here that the objective of treating the matter of values in the workshop was merely to introduce the group to the concept "value" in relation to environmental behavior and to demonstrate how deep-seated in the individual and social psyche the foundation of the environmental problem seems to lie. After introducing the matter as described above, the next task was to help the participant become aware of his personal value system, or at the least to point out to him the importance of analyzing himself in this area. The participant should have already begun self-analysis in his study of environmental perception, and analysis of personal value system can build on this beginning. Thus the group sought to "identify the value system that is inherited" in themselves, which is the first step toward the long process of determining how this value system was inherited.

Examination of Personal Values

. Several exercises to stimulate self-analysis in the context of values were developed.

a. The definition of "value" is discussed. Various definitions are introduced and the group attempts to "personalize" the definition. The group is then asked to list their personal values, what they rated highly on their personal relative scale of usefulness, importance, or general worth. This required considerable thought, patience, and time. Having made this list, the group is then asked to list the values of American society.

A "Tentative Register of American Values,"[22] which lists some of the primary personal and social values, is passed out and the group is asked to further develop their personal lists, using this fairly extensive register. The point made at this stage is that the values as stated in the Register seem inherently good. This raises the point that many factors define the "goodness" or "badness" of a value. One factor is the intensity with which a given value is pursued. Another is change of the context in which the value is operative, which may render behavior which was most acceptable twenty years ago unacceptable now. Considerable discussion of values grows out of these exercises.

b. After the lists have been made and discussed the group is asked to analyze how these values operate in their lives. What external behavioral effects do their internal valuative configurations have? Using the list of personal values, the group lists personal behaviors applicable to each value, i.e., for "economic security and well-being," possible personal behaviors such as (1) work 60 hours per week; (2) buy new appliances when possible; (3) seek more income whenever possible. The process of trying to make such a list is the key here, not the final list itself. It is difficult to make such an analysis of behavior but such exercise, if worked at with enough diligence, leads ultimately to an understanding of the meaning of "value." Many variations on this exercise come easily to mind.

c. Instruct the group as follows: Do a content analysis of a part of your curriculum utilizing the "Tentative Register of American Values." Identify the presence of values as listed in a history, geography, literature, or science lesson, or in whatever you are teaching.

Look also for operation of the pathogenic premises listed by Harman, and for any implicit assumptions that might harbor either values or premises at work. Briefly write up this content analysis and come to the workshop prepared to briefly describe what you have discovered.

d. Instruct the group as follows: Take the "Tentative Register of American Values" and select from it the one value around which you build a lesson appropriate to your subject area and grade level. One might select "property rights," for instance, and create a lesson in geography, history, or government. What are property rights? How much do we in our society value them? What has been the effect of property rights on the development of America? What is happening to property rights today? How do property rights affect you? There are many things that you can do. Do not identify this as an "environmental" consideration. After you have developed such a lesson (and I have had an opportunity to review it), apply it in your classroom and evaluate its effectiveness.

The lessons developed are presented to the workshop group and criticized by member of the group. This exercise provides a good example of how "environmental" learnings can be integrated into the curriculum as well as providing exercise in study of values. It is important that teachers take this matter seriously and create lessons that are useful to them. This will allow them to relate the complex and abstract discussions of values that they engage in to the "real" educational environment in which they must work.

e. Exercises may be designed to illustrate the operation of values and of pathogenic premises on members of the group. These exercises, which resemble small simulation games, should be carried out during the workshop meetings.

One such exercise was developed during a workshop session in response to discussion of Harman's pathogenic premises. Several group members illustrated the operation of such premises in statements such as "I think science and technology will step in to solve these resource problems before we are in serious trouble." One person stated that "The only way these problems are going to be solved is from the top down, by administrative edict of the government." This statement provided opportunity for the following simulation:

The instructor is the President of the United States and has been granted unusual powers by the Congress to deal with threatening massive breakdowns of biophysical, economic, and social systems as a result of environmental problems, one of which was too many people. He issues a proclamation: "In view of the growing population crisis, I am forced to order stringent birth control measures as national policy. As of today, no woman in the United States is allowed to bear more than one child. After her one child has been born she will be subjected to compulsory sterilization. Crimianl penalties will be levied on all who fail to pursue this path. This course of action will be in effect indefinitely. In addition to this, I order that . . ."

The top-down proclamation had been issued, as the teacher had advocated. The group was asked to suspend their disbelief that such a thing could happen and to react to the proclamation as though they had just listened to it on television. Discussion first traveled through questions such as "How are the women sterilized?" "What will men do?" "Aren't there any alternatives?" All of these were good questions, but beside the point. Finally the group begins to respond emotionally, from their various religious viewpoints, and their deep-seated feelings about personal rights and responsibilities emerge. The group is able to observe the "pride of families" premise[23] operative in them. Emotions usually reach quite a pitch in discussion of the "President's" edict. One of the many valuable lessons that comes out of discussion of this simulated situation is "How much better it would be to avoid such a top-down edict--and its reduction of basic rights--through education." The difficulties of such education are recognized, but the educational imperative is noted.

f. The group has identified pathogenic premises, values, and attitudes in the readings and lectures they have been exposed to. They have examined how these elements operate in their personal lives. They are in need of an exercise in which they identify alternatives to the pathogens. They need such to counter the discouragement that examination of the pathogenic elements can bring on

First, the group is instructed to list the "environmentally good" values that come to mind. They may refer to the "Tentative Register of American Values."

They are to try to construct an environmentally ideal value configuration. Most, if not all, values that they list are held in society today. (The task is not necessarily to create new values.) It may be helpful to limit the list to 20 in number. They are requested to explain in a short paragraph why they include a particular value on this list. The group should do this outside of workshop meeting time.

After the individual group members have worked separately on these lists, they share their results. The group is assigned the task of agreeing on a configuration of 20-30 values. This will involve much discussion of alternatives to the pathogenic premises and values that have been identified.

A good follow-up to this group exercise is to then assign each group member, or sub-groups, the task of examining ways to teach the alternative value in the context of the public school curriculum.

Many similar simulations are possible, such as a proclamation reducing all income to one-half its present level, the forced removal of the automobile from the society, and so forth. The workshop instructor should use this device extensively in explicating the operation of pathogenic premises, assumptions, attitudes, and values in the workshop participants.

Workshop Timetable and Aids

Suggested Value Phase Duration: Three three-hour sessions, with considerable time spent in preparation for these sessions.

Suggested Reading:

Baier, Kurt, and Nicholas Rescher, Eds., Values and the Future. New York: The Macmillan Co., 1971.

Harman, Willis W., "Alternative Futures and Educational Policy," Memorandum Report EPRC 6747-6, Educational Policy Research Center, Stanford Research Institute, Menlo Park, California 94025, February 1970.

The exercises described here can be viewed only as a primitive means of exploration in an effort to find ways to help people understand the difficult concept "value," its relationship to the environmental problem, and its operation in the individual himself. There is an extensive literature on the process of valuation which should be explored with the environmental imperatives calling for extensive societal value change clearly in mind. It seems that the matter of "what I value," or of "what I rate highly in usefulness, importance, and general worth in

my life" is the central problem of environmental education. The observable responses of environmental systems to prevailing valuative norms leave no doubt that some change is called for. This phase of the teacher education program developed in the Sedro-Woolley Project aims at demonstrating this fact and motivating teachers to pursue the problem in their personal lives. Any short workshop can serve only as an introduction to the problem.

The Educational Environment

There is great need to ask how the educational environment of the public school affects the environmental education of the students present in it. A review of the literature of environmental education indicates that most people working on this process assume that the educational environment is fixed and that their task is the creation of methods and materials based on environmentally significant concepts which will then be utilized by teachers operating within the educational system. There is, on the other hand, a rich literature of criticism of the educational environment (Silberman, Postman, etc.), which environmental educators cannot ignore. If the criticisms of these writers are at all valid, then radical transformation of the educational environment seems necessary if the methods, materials, and concepts of environmental educators are to be effective. Here again the equation "environmental education equals education" appears. A statement by Emanuele Corso of University Extenstion Arts, the University of Wisconsin, aired at the National Conference on Environmental Education at Green Bay, makes the point well.

> We seem to want to substitute one set of specified behavioral objectives with another, more to our liking--just like General Motors revising the production line for a new model year. Will the new "product" be more humane or more sensitive? Probably not! If the present methodology doesn't work with present objectives, it isn't going to work with new ones. . . . This is not to say that the development of concepts is not good, but that the problem demands that you cannot proceed without equal energy being devoted to humanizing of schools; the implementation of good learning environments.

Corso penetrates to the core of one province of concern of environmental educators, and one section of the teacher education workshop is devoted to discussion of altering the educational environment. What are the problems of that environment? How do they relate to us as environmentally concerned educators? What changes in the environment must be made? This part of the workshop deals with these questions.

Previous workshop discussion has been directed obliquely toward the educational environment. Participants were asked to perceive as thoroughly as possible their classrooms and other elements of this environment. The effects of different rooms and different arrangement of people within the rooms were discussed. Conclusions were drawn as to effective and ineffective ways to organize and utilize space. These considerations are continued and expanded upon in discussion of the educational environment as a whole.

Teachers are constantly critical of the educational environment, but their criticisms are usually impotent because they are not consistent and constructive. A model of the educational environment of the public school, partially derived from Everett Reimer,[24] was introduced to the group so that all workshop members could structure their criticisms in a similar way. They are in need of a way to describe the ucational environment of the school and a model gives them a way in which to do this. The model describes four major elements: time, space, people, and objects. A sample description of these elements in Sedro-Woolley is as follows:

TIME	Age 5-20 Daily 8:00 am-3:00 pm Monday-Friday 36 weeks/year 12 years/student	PEOPLE	Teachers Students Administrators
SPACE	School Schoolroom Laboratory Athletic field Occasional field sites	OBJECTS	Desks Blackboards Books Pictures Paper Etc.

Workshop participants were asked to use this model to describe their educational environment and to express their criticism of that environment, criticisms they had before participating in the workshop and criticisms they might be formulating through their considerations of environmental education. They could do this using the following model:

	Problem Description →	Process →	Solution
TIME	Periods too short and inflexible.	Convince fellow teachers of importance of block scheduling. Propose a plan. Initiate action on the plan and motivate fellow teachers to act on it.	Block scheduling
PEOPLE			
SPACE			
OBJECTS			

The teacher could identify a problem relative to time such as class periods that are too short and inflexible and could then list possible solutions which are alternatives. Teachers do not seem to have difficulty describing problems and suggesting alternatives. Problems arise in their treatment of how the solution is to be achieved. That is the province of "process." This simple model illustrates the importance of process and easily demonstrates why most criticisms of the educational environment result in little change in the institution. Little attention is paid to process. If teachers agree that the educational environment should be transformed into a more humane environment in order to achieve a more humane world, then use of a model such as this one is most useful.

The workshop participants are asked to discuss their criticisms described by the model and to explain their alternatives. The group is then broken into smaller groups to discuss the process that seems necessary to solve the problem. Groups work out a strategy by which the problem can be attacked and lay out a task list and timetable for the campaign. This exercise is intended to help them perceive problems of the educational environment and to realize that these problems will only be solved through a long process involving cooperation of many individuals and much time and energy spent. Pursuit of actual solutions to the problems identified is outside the province of the workshop, but it is to be hoped that an outgrowth of the workshop will be district-wide concentration on problems, solutions, and process.

The table on p. 32 gives a brief and general description of the Sedro-Woolley educational environment using the model described and showing what changes are occurring in the four major components as a partial consequence of the workshop in environmental education.

Time is spent in the workshop discussing the changes in the educational environment that seem advisable in light of the importance of environmental perception and reexamination of attitudes and values in the environmental education process. Harman again has made cogent and summarizing statements that serve well as springboards for discussion:

> Educational environments for facilitating reexamination of basic premises, values, attitudes, and perceptions tend to be characterized by a non-evaluative, low threat, open, permissive atmosphere wherein individual perceptions and feelings assume at least as much importance as knowledge about values and beliefs, and wherein the individual feels safe in considering the possibility of change. A key element in the environment is the openness and non-defensiveness of the teacher or group leader.[25]

Considerable time may be spent on the "whys" and "hows" of achieving the environment that Harman advocates. Especially useful here is discussion of the role of the teacher as presented in Freedom to Learn of Carl Rogers.[26] Rogers provides thought-provoking discussion of how the teacher may create the low-threat, student-centered environment that seems essential to effective environmental education. Discussion may go in

TABLE I
THE SEDRO-WOOLLEY EDUCATIONAL ENVIRONMENT*

	As It Was	As It Is Becoming	As It Might Be
TIME	Age 5-17 Daily 8:00-3:00 Monday-Friday 36 weeks/year	Daily programs extend to evenings (H.S.) Saturdays utilized	Age: lifetime Flexible daily program 7 days/week 52 weeks/year (a large part outside formal environment)
SPACE	School Schoolroom Lab Athletic field Occasional field site	Environment surrounding school increasingly utilized Study sites in the region visited periodically Community--the man-made environment--studied	School, schoolroom Environment surrounding school Community "The World as learning space"
PEOPLE	Teachers Students Administrators	Community resource people beginning to be used by teachers both in school and in the field "Each one teach one"--students as teachers emerging	Parents Teachers School Administrators Community resource people "The Human World"
OBJECTS	Books Nature	Games (simulations) are being used Products of the arts (such as photographic study prints by a local photographer) are being used	Books Other written materials Games Products of the arts Records Computers Nature

*Based on a model by Reimer.

many directions in the necessarily brief discussion of the educational environment in the workshop. A few significant observations by writers that stimulated discussion are presented here.

> What educators must realize, moreover, is that how they teach and how they act may be more important than what they teach. The way we do things, that is to say, shapes values more directly and more effectively than the way we talk about them. Certainly administrative procedures like automatic promotion, homogeneous grouping, racial segregation, or selective admission to high education affect "citizenship education" more profoundly than does the social studies curriculum. And children are taught a host of lessons about values, ethics, morality, character, and conduct every day of the week, less by the content of the curriculum than by the way schools are organized, the way teachers and parents behave,. . . the kind of behavior they approve and reward and the kinds they disapprove or punish.[27]

> To correspond with the view of wholeness of the child, the environment is to be conceived in its wholeness as a micro-society, complete with such considerations as materials, laws, social relations, formal and informal structures, long- and short-range goals, and values and aversions. All aspects of life should be available for examination, and the aspects most salient at any particular time should be faced.[28]

> Life comes from life, and the teacher is the living agent in the school. As a living agent, the teacher must not abdicate the human dimensions that he can communicate to the child's respect for his individuality; recognition of his particular interests, needs, and directions; encouragement of his growth in identity. The human talents, the human resources of the teacher are the teacher's primary value in the educative process.[29]

Discussion of educational environment will probably not be a new experience to practicing teachers. Their teacher education programs in undergraduate and graduate schools certainly focused time and again on problems and opportunities of that environment. Nevertheless they have probably not considered the educational environment from an explicitly "environmental" perspective, nor related the mass of educational criticism that they are familiar with to the central problem of defining environmental education. The task of the workshop leader is to aid the teacher in understanding the educational system as an environmental system, constantly changing and with extensive feedback mechanisms which, if he is sensitive to them, will greatly increase his effectiveness.

Workshop Timetable and Aids

Suggested Educational Environment Phase Duration: Two three-hour sessions.
Suggested Reading:

Moustakas, Clark, Personal Growth: The Struggle for Identity and Human Values. Cambridge, Mass.: Howard A. Doyle Publishing Co., 1969.

Curriculum

The ultimate goal of the Sedro-Woolley Project is curriculum, an integrated program of study kindergarten through grade twelve with pre-school and post-school extensions. The means toward this end is the sensitization of the teacher to the imperatives of the environmental education problem. If the teacher becomes concerned about the environment, about the multiple components of this continuum, and perceives his participation in the environmental problem and his opportunity to work toward partial solution of it, then he can look at what he does in his life at large and his teaching role in particular with the critical eye essential to the effective environmental educator.

The Project's approach to curriculum is synergistic and long-range. Teachers are exposed to the program of study that has been outlined to this point in this report, and are then asked to apply their insights gained to their classroom situations and to record what they do. The record of classroom effort is a static description of a dynamic curriculum. Over a period of years, if a large number of teachers work on the problem of environmental education in this manner, a number of K-12 curriculum models can be compiled and recorded. The ultimate whole product of the efforts of many teachers will be greater than the sum of these efforts examined singly--it will be a curriculum.

After the workshop group has examined the environmental education task facing them they are asked to develop a personal project in which they work toward environmental education as they see it. The project period in Sedro-Woolley spanned several months. As the teachers worked on their projects they met regularly to discuss environmental education in general and their projects in particular. The fruit of their effort is appended to this report in a number of packages. Three-fifths of the group developed projects worthy of presentation in this form, which the Project Director regards as a successful percentage of production from the group. Other teachers in the group changed their classroom behavior but did not, for a variety of reasons, record their activities.

In workshop discussion of curriculum before embarking on their project effort, the group identified a number of qualities which they felt should be evident in an environmental education curriculum. This curriculum should be:

a. Holistic. Organized in such a way that the interrelatedness of knowledge, of the parts of the whole environment, is evident. The objective is understanding of both parts and wholes.

b. Integrated. Studies of environment are not isolated from other studies. To attain such one must avoid ever saying, "Now we are going to study about environment." The assumption is that we are always studying the environment in one way or another.

c. Process-oriented. Facts are not important in themselves but are important only inasmuch as they have "meaning," or contribute to understanding. A paramount objective is that students learn about learning. "Participatory" and "experiential" methods involve the student more in process than does one-way communication in the form of the lecture, for instance. The teacher is the facilitator of process. Students are involved in planning and in facilitation of process. The asking of questions is important as a stimulus to the process of seeking answers.

d. Field-oriented. The student examines environments whenever possible in reality rather than as abstraction. When studying the river, go to the river. When examining government, go to City Hall.

e. Problem-oriented. The student brings his growing skills and interests and his disciplinary insights to bear on problems which affect him and are the effect of his actions. He learns that he is a participant in systems and defines problems as feedback from systems of which he is a part.

f. Community-oriented. The walls of the school include the community, its problems, its people, its multiple learning resources. Students examine man-environment systems in the community environs of their school "Experts" in the community participate in teaching younger members of the community in school and outside of it. Students teach adult community members in the same way.

g. Environmentally-ecologically conceptual. A body of concepts is being identified that are essential to understanding of man-environment relations. The workshop group utilized the conceptual schema being developed by Robert Roth[30] as a device by which to approach this quality.

This is not a complete list of all qualities identified, but presents the major ones. It is important to note that none of these qualities are mutually exclusive. A community-oriented program is certainly field-oriented, and is studying problems in the community in a holistic and integrated fashion. The qualitative distinctions are made here purely as perceptual tools which workshop participants can use in critically examining their curricula.

The workshop participants are urged to attempt to build these qualities into their curriculum, which they have an opportunity to do under the supervision of the Project Director during the project phase of the Project. It is a good idea to discuss the preparing of instructional objectives before entering this project phase. Clear definition of these objectives is necessary if the individual projects are to be internally consistent and fully and clearly developed. The teachers

are requested to think of their work in two dimensions as they prepare their curricula. One dimension is vertical and is that of grade level. Students will move up to another grade the year following and the teacher should of course think of this, involving teachers from the next level in their work whenever possible. The other dimension is horizontal and spans compartments of knowledge or disciplines. Teachers at the secondary level especially must consider this dimension in order to achieve the qualities discussed above. Ways of considering these dimensions are discussed before the teachers begin the project phase.

Project Phase

The project phase is development of curriculum by the teacher, curriculum that is essentially modification of their day-to-day teaching based on the learning they have achieved in the workshop up to the point of beginning the project. The concrete objective of this phase is a written record of how they have modified their curricula. The group does not meet weekly during this phase, but meets bi-weekly to discuss problems and progress that each teacher is encountering in his effort.

It is well, at these bi-weekly meetings, to have participants present their efforts, verbally or otherwise, in considerable detail so that they can receive feedback from the other members of the group. It is important that members of the group share breakthroughs and problems during this phase of the effort. Sharing helps to build group solidarity and very positive solutions to individual problems are often suggested by group members.

Meetings during this phase offer the opportunity to review methods and materials that are being developed elsewhere, such as those of NEED,[31] the Center for Curriculum Design,[32] and the Group for Environmental Education.[33] It is a good time to bring in outside "experts" whom the teachers can query about various dimensions of environmental education. The Sedro-Woolley project group talked with a political scientist, an architect, an ecologist, an educational psychologist, and a population biologist. Each consultant gave a brief talk and then entered into group discussion. Finally, the project phase provided an opportunity to review books and other instructional materials, particularly audio-visual materials, that might be helpful to the group in their pursuit of environmental education.

Workshop Timetable and Aids

Suggested Curriculum Phase Duration: One or two three-hour periods in discussion of qualities; eight to twelve weeks in project phase, with four to six two-hour meetings for discussions of progress, review of materials, etc.

Suggested Reading:

Roth, Robert E., "Fundamental Concepts for Environmental Management Education," in Outlines of Environmental Education, Clay Schoenfeld, Ed. Madison, Wisconsin: Dembar Educational Research Services, Inc., pp. 65-74.

Stapp, William B., "Environmental Encounters," Environmental Education, Vol. 2, No. 1, Fall 1970.

Terry, Mark, Teaching for Survival. New York: Ballantine Books, 1971.

The products of the curriculum phase in Sedro-Woolley are appended to this report (Appendix C). They range greatly in their attainment of the qualities viewed as necessary for the ideal environmental education curriculum. They are not final curriculum packages, but are designed to be studied by other teachers and hopefully improved upon. Many of the teachers who produced these reports are already at work modifying their original approaches. An attempt is underway to record these modifications.

This curriculum phase is truly an ongoing dynamic process which, over a period of years, should result in a K-12 curriculum which reflects the qualities of good environmental education.

EVALUATION

The most critical element of any educational development project is evaluation. Did the new program introduced have the desired effect? The planners of the project reported here were very cognizant of the importance of evaluation but little conclusive evaluation could be carried out in the initial time period reported upon here.

Evaluation work that was carried out included pre- and post-testing of workshop participants and a control group. Selection of instruments and evaluation of data were carried out by Clifford E. and Patricia W. Lunneborg of the University of Washington Bureau of Testing. The instruments, administration procedures, and results of the evaluation are described in the appended report by the Lunneborgs (Appendix D). The other evaluative work that was carried out was exploratory in nature and was aimed at determining ways in which the curriculum packages developed by the teachers could be evaluated. Research Assistants in University of Washington's Department of Psychology conducted this work under the Lunneborgs' direction. Reports of these efforts are included in part two of the Lunneborg report. These efforts were preliminary and exploratory, meant to lead to an extensive evaluative phase in the projected second and third years of the project.

Essentially, the evaluation effort must be longitudinal and must measure the effects of environmental education on human behavior. The focus of longitudinal and evaluative research is upon the changes occurring in the individuals within the system, both internal changes--such

as in values--and external changes in environment-related behaviors. The evaluation plan in the project is that the three populations being influenced by the program--students, teachers and school administrators, and the population at large--are to be compared over an extended period of time with like populations outside the program. This is a complex and extended evluative effort and will proceed through three general parts.

The first part is general test construction. Experimental instruments are being assembled and administered to students at various levels, and to adults, together with traditional, validated tests of values, decision-making strategies, interests, and attitudes. The new tests of values and decisions are intended to be of two types: those based on already existing moral thought in which survival and quality of life are featured as opposed to "pathogenic" moralities, and those based empirically on the responses of environmental "experts" to hosts of items. Subjects will also complete biographic data sheets containing behavioral correlates of values. The goal of this phase is to produce reliable, concurrently validated instruments which cover all the critical factors in this new concept of education and decision-making.

The second part of the evaluation effort, the beginnings of which are reported in the second section of the Lunneborg report, is specific test construction. This is related to general test construction but will be confined to that phase of the research effort in which teachers are undergoing re-education and revision of their curriculum. Here teachers with individual classroom or school projects are teamed with project personnel who will help them operationalize their educational objectives and measure the outcomes of environmental innovations in terms of both student values and behavior. It seems imperative that environmental educators, whose basic objective is one of survival of man through better environmental behavior, be able to demonstrate that chances for survival have increased as a result of a particular learning package.

The third part of the evaluation effort is environmental test validation. Here experimental and control subjects and "experts" will be located at periodic intervals after their initial testing and the final environmental battery readministered. The goal of this phase is valid tests that are neither region- nor time-limited that will have some utility for other populations of comparable ages.

This is the rather extensive evaluative scheme that has arisen out of the year of project work being reported upon here. This year of effort has demonstrated the complexity of the environmental education task and thereby of the evaluative task which must complement it. Work has only begun on the scheme and will take a number of years to complete. The importance of valid test construction and overall evaluation of the impact of environmental education programs on human behavior cannot be understated. The Lunneborg report gives a complete account of work carried out to date in this project.

DISSEMINATION

The ideas and methods generated in the Sedro-Woolley Project have extended beyond the school district in a number of ways. Throughout the project period an effort was made to reach the general public with the ideas that were being generated by project staff, teachers, and students. A special effort was made to communicate project goals and activities to the local community. The following dissemination activities were engaged in.

a. Verbal descriptions of project activities were given to:

Intermediate District School Superintendents
Intermediate District Middle School Principals
Natural Resources Forum of Washington
Burlington Environmental Education Council (neighboring school district)
Washington Youth for Environment (statewide group of high school students)
Kiwanis Club of Anacortes
Lions Club of Sedro-Woolley
Society of American Foresters, Northwest Washington Group
Skagit Valley College Conference on Environment
Democratic Women's Club of Sedro-Woolley
Whatcom County Environmental Education Council
Clear Lake School Parent Teachers Association
First Congregational Church of Anacortes
State Convention of Vocational Agriculture Teachers

b. The Project Director periodically wrote a newspaper column in the regional newspaper of the Skagit Valley (The Skagit Valley Herald, Mount Vernon, Washington), in which Sedro-Woolley is located. In the columns, he attempted to explain simply and briefly what the Sedro-Woolley Project was about and to deal with basic environmental questions, problems, and ideas. The rationale behind this effort was that this newspaper is the most common communications medium in the region. While it was not possible to talk directly with most members of the community, some of them might be informed through this written medium. A sample of these writings in included in Appendix E.

c. A Sedro-Woolley High School student group calling themselves Environmentally Concerned Students (ECS) were active before the Project began. The Project Director worked with these students throughout the year and addressed them several times. This local group took the lead in forming a statewide high school environmental action organization, Washington Youth for Environment (WYE). The Project Director addressed the organizing convention of this group and aided the new group in publishing and disseminating its statewide newsletter. Environmentally Concerned Students participated in Project efforts in many ways, and student speakers addressed various

community groups. The core of their message often was the matter of individual and social values and attitudes toward environment.

The culmination of student dissemination of Project-initiated ideas occurred during the Sedro-Woolley High School graduation ceremony. Several graduating seniors of high academic standing were leaders of ECS and, with a teacher participating, presented a thought-provoking panel discussion of environmental attitudes and values as part of the graduation exercise. This non-traditional approach to graduation speechmaking, while controversial, was generally well-received.

d. Project funds were administered through Huxley College of Environmental Studies, a cluster college of Western Washington State College. The Project Director became a staff-member of this cluster college when he undertook directorship of the Project. This affiliation resulted in an unexpected spin-off from the project. Largely as a consequence of the Project Director's efforts, a concentration in environmental education has been established at Huxley College (a concentration is a problem-oriented and individualized equivalent of a subject major). The development of environmental education in Huxley College has led to dissemination of project ideas in the following ways:

Pre-service teacher education program. This is a two- to three-year program of teacher preparation generally based on the model developed for the Sedro-Woolley Workshop. Experience with teachers in the field led to conclusions as to what should ideally be built into a pre-service teacher education program.

In-service teacher education. The workshop model described in this report is being applied at the rate of one course per quarter through Western Washington State College's Department of Continuing Studies for in-service teachers in the Northwest Washington region. This in-service program is coordinated by the Project Director, now a faculty member of Huxley College, and is taught by him with the aid of teachers who have participated in the Sedro-Woolley Workshop.

Summer institutes. Institutes in environmental studies, primarily for teachers, are offered by Huxley College. The first was offered in the summer of 1971. A number of teachers from the region as well as from outside Washington State participated. The format of the institute was multidisciplinary and integrated an introduction to environmental studies with general education and environmental education in particular.

Short workshops. The original purpose of the Sedro-Woolley project was to understand the meaning of environmental education in a single school district so that environmental

education could be developed in school districts throughout the region. One way in which the insights gained from the Project are disseminated is through one-day and weekend workshops. One such was offered by a cadre of Sedro-Woolley teachers during the Fall of 1971; 160 teachers from the region attended. Further workshops of this nature, on various topics, will be offered periodically throughout the region, with cadres of "retrained" teachers doing most of the work.

Environmental education newsletter. A publication called "The Ongoing Seminar" is published on an irregular basis by the Huxley College Center for Environmental Education. At the conclusion of each workshop, extension course, summer institute, or short course held to date, participants have expressed frustration that their training experience is ending and have voiced the desire to further investigate concepts and methods encountered. "The Ongoing Seminar," edited by a group of Huxley undergraduates, reports what is happening at Huxley, in the region, and in environmental education generally. It is intended to be a useful tool for the active educator and contains book and article reviews and abstracts, methods, summaries of curriculum developments in environmental education, and contributions by past participants in environmental education activities that have grown out of the Sedro-Woolley Project and the Huxley Center for Environmental Education. A sample of the newsletter is appended (Appendix F).

These are the formal ways in which the work of the Project is being disseminated. The Project enabled people with ideas about environmental education--students, public school teachers, college teachers, and others--to come together and to translate their ideas into action. One ultimate goal of the Huxley Center, a goal originally conceived by the Northwest Environmental Education Center, remains a regional program of environmental education that can serve as a model of what to do (and what not to do) for other regions of the state and nation. All dissemination efforts are aimed at involving people in the environmental education effort in the hope that the end product of all of these efforts will be greater than the sum of all of the parts.

III. CONCLUSIONS AND RECOMMENDATIONS

The major conclusions that may be drawn from project work to date are:

a. A program of in-service training of teachers is necessary if an effective district-wide environmental education program is to be initiated. The majority of in-service teachers do not now have the conceptual and methodological tools necessary to pursue environmental education objectives.

b. Environmental education can and should be pursued at all grade levels and in all subject areas in the public school program.

c. The desirable qualities of the environmental education curriculum seem to be:

- Holistic, or organized in such a way that the interrelatedness of knowledge, of the parts of the whole environment, is evident.
- Integrated into, not isolated from, other studies.
- Process-oriented.
- Field-oriented.
- Problem-oriented.
- Community-oriented.
- Environmentally-ecologically conceptual.

d. These qualities are difficult to attain because of the present organization of the educational environment. Some reorganization of this environment seems called for if environmental education objectives are to be pursued effectively.

e. Extensive evaluation instruments to measure behavioral and attitudinal change resulting from environmental programs need to be developed.

These conclusions are general and tentative because the project as conceived is not complete.

This report must be viewed as a progress report rather than as a final report, and the primary recommendation must be that exploration of the ideas unearthed in this investigation be continued. Concrete

products of the project are the teacher education program and the curriculum packages. These productions are reported upon here with the recommendation that educators attempt to apply them in their work and to thereby test their effectiveness. The teacher education element of environmental education seems the most critical in the exploratory stages of this new look at the educative process. It is hoped that teachers of teachers will explore and expand upon the ideas and methods suggested and will communicate the results with the investigators reporting here.

The learning packages are working pieces of curriculum. They are not static. Project investigators intend to disseminate these packages throughout the Northwest Washington region to active teachers and to encourage these teachers to utilize, modify, and build upon them and to feed back their ideas to project investigators. The end result of this trial-error-feedback-compilation process will be one form of the environmental education curriculum.

Finally, it is recommended that the project being reported upon be continued. This report covers only the first year of a planned three-year project. Unfortunately, financial support for the second and third years and for the longitudinal evaluation was not forthcoming at the end of the first-year period. Project staff feel that the work begun can and should be continued and this is their primary recommendation. Continuation would hopefully result in less tentative conclusions than are possible at this stage of investigation.

NOTES

[1]Carl Rogers, Freedom to Learn (Charles E. Merrill Publishing Co., Columbus, Ohio), 1969.

[2]A movie version of what was originally a Television Special. Available through CCM Films, Inc., 866 Third Avenue, New York, New York 10022.

[3]Willis W. Harman, "Alternative Futures and Educational Policy," Memorandum Report EPRC 6747-6, Educational Policy Research Center, Stanford Research Institute, Menlo Park, California, February 1970.

[4]Forrester, Jay, World Dynamics (Wright-Allen Press, Inc., Cambridge, Massachusetts), 1971.

[5]Clay Schoenfeld, "What's New About Environmental Education," in Outlines of Environmental Education, Clay Schoenfeld, Ed. (Dembar Educational Research Services, Inc., Madison, Wisconsin), 1969.

[6]B. Ray Horn, "Creating Environmental Awareness," adapted from a paper presented at the Park and Recreation Workshop, Department of Recreation, Southern Illinois University, June, 1969.

[7]Public Law 91-516, 91st Congress, H. R. 18260, October 30, 1970 (Environmental Education Act).

[8]National Conference on Environmental Education, sponsored by the University of Wisconsin-Green Bay and held at Green Bay, Wisconsin, December 3-5, 1970.

[9]Roderick Nash, Wilderness and the American Mind (Yale University Press, New Haven, Connecticut), 1967.

[10]Stuart Udall, The Quiet Crisis (Holt, Rinehart, and Winston, New York), 1963.

[11]Frank Graham, Jr., Man's Dominion (H. Evans and Co., Inc., New York), 1971.

[12]Charles Reich, The Greening of America (Random House, New York), 1970.

[13]Theodore Rosczak, The Making of A Counter-Culture (Doubleday and Co., New York), 1968.

[14]Harman, "Alternative Futures and Educational Policy."

[15]Nicholas Johnson, "Test Pattern for Living," Saturday Review, May 29, 1971.

[16]Edward T. Hall, The Hidden Dimension (Doubleday and Co., Inc., New York), 1966.

[17]Aldo Leopold, Sand County Almanac (Oxford University Press, New York), 1949, p. 173.

[18]Association for Supervision and Curriculum Development, Perceiving, Behaving, Becoming (National Education Association, Washington, D.C.), 1962, pp. 62-82.

[19]Lawrence K. Frank, "The Teacher as Communicator," Wheelock Alumnae Quarterly, Vol. XXXIV, Fall 1963, quoted in Clark Moustakas, Personal Growth: The Struggle for Identity and Human Values (Howard A. Doyle Publishing Co., Cambridge, Massachusetts), 1969.

[20]J. Krishnamurti, Education and the Significance of Life (Harper and Row, New York), 1963, p. 125.

[21]Bernard Gunther, Sense Relaxation (The Macmillan Co., New York), 1968, p. 162.

[22]Nicholas Rescher, "Tentative Register of American Values," in Values and the Future, Kurt Baier and Nicholas Rescher, Eds. (The Macmillan Co., New York), 1971.

[23]Harman, "Alternative Futures and Educational Policy," p. 4.

[24]Everett Reimer, "An Essay on Alternatives in Education" (unpublished, Cidoc Cuaderno, Cuernavaca, Mexico), 1970, p. 8/3.

[25]Harman, "Alternative Futures and Educational Policy," p. 22.

[26]Rogers, Freedom to Learn, pp. 151-166.

[27]Charles Silberman, Crisis in the Classroom (Random House, New York), 1970, p. 9.

[28]Herbert A. Thelen, in Association for Supervision and Curriculum Development, To Nurture Humaneness (National Education Association, Washington, D.C.), 19 , p. 30.

[29]Clark Moustakas, Personal Growth: The Struggle for Identity and Human Values (Howard A. Doyle Publishing Co., Cambridge, Massachusetts), 1969, p. 11.

[30]Robert E. Roth, "Fundamental Concepts for Environmental Management Education," in Outlines of Environmental Education, Clay Schoenfeld, Ed. (Dembar Educational Research Services, Inc., Madison, Wisconsin), 1971.

[31]NEED (National Environmental Education Development), National Park Foundation, 1971. (Publications by Silver-Burdett Co., Morristown, N.J.)

[32]Center for Curriculum Design, Kendall College, Evanston, Illinois (Spaceship Earth Curriculum Project).

[33]Group for Environmental Education, 1214 Arch Street, Philadelphia, Pennsylvania (Our Man-Made Environment Series).

APPENDICES

Appendix A. Entry Phase Handouts, Sedro-Woolley Environmental Education Workshop.

Appendix B. A Selection of Environmental Encounters.

Appendix C. Curriculum Package Reports (listing).

Appendix D. "Evaluation of Environmental Education in the Sedro-Woolley School District," Patricia W. and Clifford E. Lunneborg, University of Washington, Seattle, Washington.

Appendix E. A Selection of Newspaper Columns Written for The Skagit Valley Herald.

Appendix F. "The Ongoing Seminar," Environmental Education Newsletter, Number 1, November 1971.

APPENDIX A
ENTRY PHASE HANDOUT, ENVIRONMENTAL EDUCATION WORKSHOP

Introduction to Environmental Education
Instructor - John Miles

The objective of this course is to give you an opportunity to explore the meaning of the emerging concept and process "environmental education." It provides a vehicle in which people from many educational levels and backgrounds can come together out of interest in education and in the future of the environment to explore the role of education in solution of the pressing environmental problems of the world. It will consist of a look at the educational environment as it exists today, at the nature of what might be called an "ecological conscience," and at possible responses within the educational context to environmental imperatives demanding deep and extensive educational change. The course begins and ends with you, who have chosen now to step into the role of the "to be educated," that of the student. The primary method of the course will be that you, the student, will undergo a deep self-analysis as a human organism relating to the environment and as a teacher relating to a specific educational environment. "What am I in this age illuminated by new knowledge of ecology? Am I a part of the solution or a part of the problem? What is the problem? What can I do to change myself so that I can more clearly exercise my ecological conscience?" These are a few of the questions that you may ask yourself.

As you are working in the course you will be studying in more depth the specific environmental problems covered in the Huxley and Western courses that you may have elected to take. We will try at all times to complement "content" courses with this more "pragmatic" and "self-analytic" course.

The basic elements of the course are as follows:

A. Persons

We must come to know ourselves and each other in the context of the problem with which we are dealing. We are brought together by a common interest and concern but we all have our personal versions of this interest. Our individual and heterogeneous approaches to the problem are valuable and must be honored, shared, and explored.

We are persons involved in a learning process. This process is environmental education. If we can understand how we react and grow, where and how we succeed and fail as learners, then we can gain insight into the process to which we will subject our students. We are a laboratory, a case study in environmental education.

B. Encounters

We constantly relate to our environment. The environment is the totality of the surrounding conditions that affect you and me. The

environment is everything. Everything is the environment. We must work to increase perception of this environment and of how we relate to it. Thus we will engage in a few group encounters to begin the process of analyzing our environmental perception and you will then, throughout the course, identify, analyze, and describe ten personal encounters.

Group encounters:	Audio experience Visual experience Audio and visual experience Field experiences
Individual or small-group encounters:	Verbal and written expression of encounter

The ultimate encounter is, of course, with the self. In order to record this encounter and to know where you are you will require a record. To this end you will keep a journal. The journal may be the most critical part of your task, and the most difficult. It may force you to encounter yourself.

The basic assumption here is that we cannot help others to learn about their environment, to learn to perceive it, until we have done so ourselves.

C. Procedures

The objective of all procedures will be to allow you to increase your knowledge of yourself and your perceptions of the environment, and to provide you with the opportunity to explore what this means to you as student and as educator. There are a number of suggested procedures that will enable you to pursue this overall objective.

1. Goal formulation and statement: The student may wish to consider his overall personal goals, what he wants to get out of this course, and the strategy to be pursued in achievement of these stated goals. A written statement of these goals early in the course should be submitted to the instructor.

2. Review of journal articles and presentation in writing: A model review is attached. A summary of the review may be presented in class if you so desire. You must seek out articles on topics of interest to you as discussion and exploration of environmental education proceeds. This exercise will enable you to learn which journals contain information useful to you and will provide valuable idea input into class discussions.

3. Curriculum materials: The student may wish to apply knowledge and insight gained to creation of learning packages or other units suitable for use in an education program (not necessarily the classroom). Methods conceived and materials prepared may be presented to the class for critique.

4. Group projects: A group of two or more students may work on some project and present the results as a group to the class. Participants need not be members of this class.

5. Discussions: Students may, singly or in groups, prepare discussions on assigned readings. Discussions may take the form of in-group discussions with the class as listeners, or as discussion-leading with the whole class participating.

6. Individual research projects: Students may formulate and carry out library or field research projects on some topic and choose to write a term paper. Form, originality, comprehensiveness, organization--the usual criteria for evaluating a term paper--will be used as judgment points.

7. Environmental Encounter reports: Everyone will report in writing on ten individual environmental encounters. Suggestions for reporting these experiences are attached.

8. Journal: All will keep a journal, starting today, in which they will record their thoughts about learning, teaching, themselves as learners and teachers, the environment, the educational environment, environmental problems, environmental perception, ideas for teaching, people, and anything else they wish to record. These journals will be submitted to the instuctor before the end of the course and will be returned shortly thereafter. It is hoped that this journal will become a habit and will be carried on through the year. It will provide you with a record of where you've been and where you hope you are going.

9. Readings: Key materials and supporting literature are listed as aids to orient you relative to the problems under study. They are the best materials that the instructor is presently aware of to begin study. It is hoped that you will read and study the key materials early in the course and extend reading from this base.

10. Field activity and observation: The student may wish to visit in the field particular educational environments that interest him, such as a televsion station, a newspaper office, schoolroom, or whatever. He may submit a verbal or written report on the visit to the instructor and/or the class.

D. Responsibility

We will borrow from Carl Rogers' Freedom to Learn to express pertinent ideas on responsibility for learning in this course.

"Responsibility for making the course interesting is an individual matter. Students are responsible for their own interests. Instructors are responsible for maintaining their own interests.

The instructor is engaged in research, talking about the things that interest him, reading journal articles and books which concern him. In short, he is not putting on a show in the class. He is engaged in real activities which are meaningful to him. When he gives a lecture, he does so because the topic is important to him. He doesn't do it to fill the hour or entertain students. For him it is the real thing. In this sense he is a real and genuine person pursuing his own interests. He eschews trying to control the interest of students, for this tends to confuse them by directing their attention toward the instructor's goals rather than their own.

Likewise the student is a genuine person pursuing his interests. He has many optional responses available to achieve real, live, meaningful goals. This course isn't play acting for him. It isn't preparation for life; it is life. The student isn't going through a set of rituals to get a grade or please the professor. He selects certain options because they are meaningful to him. He is not obligated to do anything which is unmeaningful. If he has selected meaningful goals, if he is free to choose responses which lead to these goals, it is impossible for him to have a dull time in the course. These journal articles he reviews or those experiments he performs are not dull. He has selected and designed ones which are important to him. They are critical to realizing his goals. If he has not so selected his optional responses and the course becomes boring, he has only himself to blame.

The instructor, therefore, is responsible for maintaining his own interests, providing facilities for students to express and realize their goals through the medium of psychology. He is responsible for facilitating the communication between persons with diverse interests and the enhancement of mutual respect between such persons. He is responsible for fulfilling whatever requirements are demanded of him by the institution. He may deem it proper to define the limits of the course, that is, to accept for credit only optional responses which fit within the defined subject matter of the course. He is responsible for expressing his honest opinion of the quality of student productions.

Students are responsible for clarifying their own goals, the selection of and engaging in responses to achieve these goals, the enhancement of their own interests, the quality of their work, creativity, dropping the course if it seems not to provide the medium through which their goals may be realized."

This is the stance we will take in our studies of environmental education. One of the major difficulties in education today is that of responsibility for learning. This course will give us an opportunity to observe our own reactions to this problem. If we work hard and get a lot out of it, why have we done so and what have we learned about motivation that might be applicable to our role as educators? If we do not

work and get little from the course, we can learn from this as well.

Our experience itself will serve as a test case in education. We exist in an educational environment that is supposedly designed to facilitate learning, and we have placed ourselves in that environment with particular objectives in mind. Analysis of our personal experiences should be the key to progress toward personal definition of what we as environmental educators are and should be.

E. Evaluation

The instructor will keep a file of all productions during the course by each student. Each student will turn in a self-evaluation on Wednesday of the final week of the course. The quantity but particularly the quality of the works produced, along with the student's evaluation of his effort, will constitute the grade.

APPENDIX B
A SELECTION OF ENVIRONMENTAL ENCOUNTERS

Introduction to Environmental Education
John Miles

Mr. Mean American rises early in the morning, glances through his paper for a few moments as he downs coffee and toast, gets into his car and drives thirty minutes on the freeway to work. Eight hours later he does pretty much the same thing in reverse. He covets his two weeks of vacation, during which he moves his Caveman Camper from one Forest Service campground to another. Much of his life is spent looking at roads.

How can he live this futile (my interpretation) round of activities? Where did he learn to live like this? Does he know anything better? Probably not, because if he perceived desirable alternatives he would probably seek them. He must perceive "beauty" in his round of life--or must he?

One characteristic of Mean's life is that he seldom stops to reflect, to observe. Perhaps he never learned to do this. He never learned to really "encounter" that which is around him, to perceive the multiple dimensions of its reality. Self-preservation in his world may dictate that he not stop and "encounter," to reflect and observe. If he did he might be lost to depression or anger.

Man must "encounter" if he is to decide for himself what his life style and its context will be. Stop now and then and really concentrate on where you are from the inside out and the outside in. That's what "encounter" is all about.

Rainstorms seem terribly abused. Granted we have probably more than our share of them, especially in the summer, but there is something unique about each drizzle or downpour. For as many years as I can remember well, I have been asked to stay inside, put on a coat if I have to go out in a shower, or give up my fresh air recess in school just because of rain. Somehow I have been taught to miss a beautiful experience. Occasionally I will walk in the midst of a cloudburst or persistently misty day and recapture what I feel cheated of, but the realization that there is always a mad scramble to get inside when rain begins led me to a <u>neat</u> encounter.

It was just about dusk and another decent (weatherwise) day was ending in several respects. Clouds had piled up all afternoon and from the smell of things it would soon be raining. Excusing myself from the confines of our apartment, I lay on the grass watching the clouds. The ground gave off an evening smell, the sky, one of abundant water it would like to share. By closing my eyes my skin could feel a change not only in temperature but in the general "atmosphere" of the day. A little breeze floated by to give the insects a warning of what was to come.

Sifting down from the clouds came the first sky droplets. Tiny little ones that almost asked permission to land on the earth. For some time they were the only ones that ventured forth. Somewhat like little sneaks a few larger drops began to intrude on the swirling light mist that had accustomed the ground and myself to water. As the drizzle moved in from the San Juans it began losing the gentleness that had coaxed me out to our lawn. Shortly, Washington weather kept its promise and a deluge ensued. The breeze had turned into a steady wind and the smells were retreating closer to the ground. Somehow, though, I felt no qualms about being wet; living with the birth of a rainstorm makes it your friend.

— Ann

Holes worn by time and energy decorated the sides of the gorge. It must have been the tremendous power of the falls that put them there, but now, when the sun filtered through the vine maples reflecting in their round pools, the holes only served to make the gorge a more unique and inviting place to swim. Under the water, huge boulders, untold except by the surging of the water. For minutes I watched the surface wrestling and fleeing the unsighted obstacle course below. I was determined to reach the falls, but swimming proved to be the wrong method. Pulling myself by cracks and other conveniences at the edge of the gorge was more successful. The water pounded harder and the roar became louder.

These sounds and feelings could have been used as a warning, but all my experience with water had been good. This time I could swim toward the surface, but not reach it. Bubbles filled the water, making it seem white, and boulders rushed by as the stream carried on and pulled under. The surface reappeared and I found a rock to sit on. The water didn't look any wilder than it had before. The sounds were the same, the smells were the same, even the calmness of sun and shadow camouflage in the pools. A little more respect took the place of unnecessary confidence.

— Susan

I always knew
the mist rose to greet
the newborn darkness
that veils the afternoon

And I always knew
how gracefully it
loved the hills and
made the evenings tran uil

And I always knew
that its beauty
could not be measured
by any man at any time

But I always thought,
I always knew
what it was like.
But I didn't,
until I needed a friend that
was not here,
and no one else would do.

So I went to the afternoon,
and let it pass
until the mist called me
and caressed me
and let me feel what was there.

And then I knew
I always would know
what love
and nature
could be.

— Ann

Synergistic Thinking

The exciting thing about Bucky is that you start to think in whole new ways. Instead of trying to break every problem apart you start to fit together seemingly unrelated parts. While I was walking home from class I began to think of new patterns in education and came up with the following:

geometry-chemistry. A sphere occupies the most volume with the least surface and a tetrahedron occupies the least volume with the most surface. It is this last fact that offers the connection to chemistry. Most compounds are bounded in tetrahedral angles. The more surface contact between two atoms the more the bond strength, since a tetrahedron minimizes the volume (number of atoms) while maximizing the surface (greater bond strength); it makes sense that compounds would bond in this manner.

physics-literature. Physics is concerned with time and space and how they interact with each other. These tend to lead into philosophical considerations. Literature deals with man's trip through life: space and time are related to this. Literature also explores the relation of man to his place in history. Physics has been exploring what is the nature of the physical universe.

art-psychology. The role of perception is connected directly to the development of an art work. Just how does a person perceive his surroundings? Can the cultural bias of the time make for a particular way in which paint is put on canvas? McLuhan might help here.

Etc., etc.

— Tom

The whims of present are not here
They linger nearby
But never to appear.

The past offers hope
The future only more rope.

Fish may grow wings and
Cats may fly
But never will I.

Love is a potion
Tears are all wet
Hate is an emotion
Ecology isn't yet.

Zip Zap
Where is it at?

Not here
My dear.

Have you ever been drunk
And wondered why?

Fun is quick
But this poem ain't no trick,
Only sick.

A bird in the hand
Is worth two in the bush

Now you know why
Ecology will die

Man is too near-sighted
To see what is near.

If this sounds filled with gloom
Then maybe it is

It's only because
Man doesn't know where he is
God help him
He needs it.

Epilog

Will man make it?
I know that he must
Because even our money
Says
In God we trust.

—— Tom

What looked to us to be a murky, polluted river was a source of wonderment to the small boy. He crouched on a large rock on the shore while slowly licking the ice cream cone he had grasped firmly in his two hands and keeping a fixed gaze on the river. His eyes neither strayed to boats nor buildings but remained on the moving water. Only the passing of a freight train along the tracks behind him seemed to be able to draw him from his thoughts and the river.

Having finished the ice cream cone, he set about the task of gathering rocks along the river bank. When he had enough he began throwing the stones one at a time at a piling rising darkly from the river's edge. The wooden piling escaped the pain caused by a thrown rock by simply remaining where it had been set into the river bottom. The stones sailed to the side or over the pole and some stuck in the soft mud when they fell short of the water's edge, but none of them drew so much as a splinter from the piling.

Finally, in what seemed to be a mood of semi-frustration and loss of interest, he threw the last half dozen rocks all at once. The pole remained unscathed, but the pattern and sound created by the rocks on the water was interesting. The young boy apparently thought so too, because he hurriedly grabbed another handful from the railroad track roadbed and tried to duplicate it. When he turned for the next handful, he spotted us watching him and a grin swept across his face.

He got rid of that handful in one throw and immediately proceeded to collect more stones, not by grabbing this time, but by close, singular selection. The first three of these that he threw whizzed progressively closer to the piling, but just when I thought he was getting the range he switched to a closer target. This pole was scarred in only two throws thus returning his attention with increased confidence and renewed determination to the original piling, which he conquered with a single throw. Having established his accuracy he commenced to

throw for diatance, but no matter how he tried, his throws fell short of a dock which ran parallel to the riverbank perhaps twenty yards from where he stood. I felt that with any continued failure he might turn to see if we were still watching before regathering his efforts for a new assault. Upon seeing us he probably would have thrown until he reached the dock or his arm fell off, whichever came first. So to spare him the sore arm we left. I now have one regret over this, though. I hope that if he continued throwing, assuming that we were watching, and reached the dock with a throw, he wasn't too crushed when he turned to find that his success could not be shared. Still, if his throws never reached the dock, he was spared that embarrassment. I remember how fragile a young boy's self-confidence can be.

— Steve

I had a terrific encounter with Interstate 5 and its occupants this weekend. Although this encounter is slightly fictionalized, this is how I perceived it. I had to drive from Bellingham to Tacoma and back and this following account relates some of the mini-encounters that I'm putting together into a larger one.

I really think that freeway driving completely dehumanizes a person to the point of acting and reacting like an automaton. It's my own personal opinion that people cannot exercise their own humaneness when speeding down the road at 70 miles an hour, listening to the radio and talking to the person sitting next to them. Freeway driving becomes, for the most part, a matter of how to get somewhere in the shortest amount of time and if someone gets in your way that's their tough luck. I've come to the conclusion that you can take a kind, compassionate person, put him behind the wheel of a car and the change is similar to that of Dr. Jekyll and Mr. Hyde. There is a valid correlation between the cubic inches of the car motor and the degree of inhumaneness expressed by the person driving the car.

Speed limits are fascinating anomalies in the sea of roaring cars. Although supposedly posted to protect the drivers, these limits go virtually unheeded unless a state patrol car is visible. If perchance you decide, for conscience's sake, to obey these limits, you are liable to find yourself being honked at, passed repeatedly, or maybe sworn at. Being female I am spared that indignity most of the time unless my long-haired husband is with me. For me, the most annoying insult is to be travelling the speed limit or faster on a packed freeway and have a Volkswagen ride my tail and then blink his lights on and off. When I finally find an empty spot to change lanes, the road starts up an incline and the Volkswagen loses about 20 miles an hour. Then he's holding up traffic and the Volkswagens behind him start blinking their lights at him. It's a riot!

Another fun person is the mother with six kids in a station wagon who whizzes by you while screaming at the kids to stop giving

you the peace sign. Then, to make sure her disgust registers properly, she cuts in front of you without signaling just as you were about to exit off the freeway.

Driving postures can tell you a lot about the nervous stability of drivers on the freeway. In the morning rush hour, people are still asleep and don't really get too upset with the mess of traffic. But in the evening rush hou after a hand day at the office, they creep along miles of freeway bumper to bumper, at 15 miles an hour. They sit hunched over the steering wheels with a cigarette hanging out of one corner of their mouths and clenching the wheel with whitened knuckles. Their eyes stare straight ahead. Just about then their cars run out of gas and as they collapse into a nervous breakdown they swear to vote for rapid transit next year. Of course they don't.

Just to clear the record, I'm not absolving myself of doing the same things I've been describing. After all, I'm only human. We all are. (Until we get behind the wheel!)

— Linda

Space, beautiful uninhabited space! That is, uninhabited by man. The hills surrounding Cougar Gulch are covered with a lavender haze. Walking through the pines, the tamarack, the lavender carpet takes on other shades that aren't noticeable from a distance. There seems to be a countless variety of wild flowers. For the first time I am glad that we had a late wet spring. If we hadn't I wouldn't be able to walk through the softly colored landscape. We visit this area every year over the fourth and this is the first time I have found all the wildflowers in bloom. Usually the hills are dry and brown by now.

The deer must have had a good winter. They are fat and sleek. Perhaps all of the tall green grass and wildflowers they are grazing in may have something to do with it, also.

There are butterflies everywhere--large yellow swallowtails, white ones with orange markings, some that are more black than yellow, brown ones with delicate orange markings, soft beige colored ones with silver. Sitting in the grass to take close-up pictures of the flowers and butterlies, time becomes something to savor and let drift by. I sat still for so long that the butterflies even landed on me.

I can't help but wonder how long an experience like this will be available. Each year I can see some small encroachment on the wilderness in this area. A new home going up, or a new road built, or much worse, a planned development all staked out for second homes. Will my grandchild be able to come and sit in a natural environment like this and watch with as little disturbance as possible the interplay of nature's cycles? And the generation after that? It doesn't seem likely, unless we manage to change the value systems of this generation.

— Lavone

Location -- Living Room of Zimmerman House
Time -- 7:30 a.m.

Sitting here looking out the window at this time of day is an experience in watching the campus awaken.

Very few people or cars are anywhere to be seen. The primary sound is that of birds singing, accompanied by the distant sounds of a few automobiles. The birds and the wind through the trees almost make me forget that I'm where I am and not out in the wilds.

The sun is shining for the first time in what seems like weeks, in spite of many cumulostratus clouds.

The sound of the birds is greatly and quickly reduced to oblivion by the arrival of automobiles and people. Everyone is hurrying about as if late for class, even though there is nearly half an hour till the first bell.

The coming and going of these intruders dies down to almost nothing, as fast as they increased. The birds are not returning, though.

As I sit here my thoughts are interrupted by the noxious smell of old cigarette butts. I move them away, but they have still destroyed the mood.

The people and autos are now a constant and even the trees and wind have taken a backseat to man and his coughing, sputtering automobiles.

The sky is beginning to clear and more cirrus clouds are starting to dominate the sky, a sign of warmer weather.

People are beginning to filter into Zimmerman House itself, so it's time to end this first environmental encounter.

—— Herb

It is a very strange feeling for me to sit in a room bounded by glass cases full of stuffed animals. The owls seem to frown and stare at me accusingly, but the other animals are just there--neither forgiving, nor accusing; neither moving, nor living. It is a stretch of my imagination to even conceive that these things were actually at one time living organisms. They are so lifeless now: they're more closely related now to an ashtray or a lamp fixture. And yet at one time they held that spark within them that we call life. I would like to know the story of each one, from its birth to this display of its outer covering.

It just struck me that the chair in which I am sitting was once a part of a living thing. My eyes have been opened this summer to man's view of the world. The things we find here on this earth are for our

pleasure, enjoyment, and subsistence. Why should we live in concert with our environment when we have the intelligence to control it? Why shouldn't we rearrange nature's handiwork to make our lives more comfortable? Why shouldn't we "pave paradise, and put up a parking lot"? The answers for me lie in the unspoiled beauty of the parts of nature man has yet to lay barren. The answers also lie for me in places and situations like this room. How thankful I am that I have known these animals other than as inanimate memories. I pray that my children will, too--and their children in turn.

---- Steve

APPENDIX C
CURRICULUM PACKAGE REPORTS

Because of the number and length of these packages, they have not been bound into this final report, although they constitute an appendix to it and are submitted with it. Titles and authors of the packages are listed below; readers may address queries as to availability to the Project Director.

Sedro-Woolley Project Report No. 1, "A 'Save Our Trees' Project" (for primary grades), Laurie L. Lundgren, Huxley Center for Environmental Education, October 1971.

Sedro-Woolley Project Report No. 2, "A Study of Patterns and Tree Succession as Environmental Education" (for intermediate grades), Susan Floyd, Huxley Center for Environmental Education, October 1971.

Sedro-Woolley Project Report No. 3, "An Environmental Approach to Eighth-Grade Science," Herbert J. Sargo, Huxley Center for Environmental Education, October 1971.

Sedro-Woolley Project Report No. 4, "The Role of the Library in Environmental Education," Howard Armstrong, Huxley Center for Environmental Education, October 1971.

Sedro-Woolley Project Report No. 5, "The Project Physics Course (Modularized) (for grades 10-12), William Flint, Huxley Center for Environmental Education, October 1971.

Sedro-Woolley Project Report No. 6, "Investigating Environmental Problems in a High-School Biology Course," William Reinard, Huxley Center for Environmental Education, December 1971.

Sedro-Woolley Project Report No. 7, "An Environmentally Related Program for the First Grade," Angelyn K. Shafer, Huxley Center for Environmental Education, December 1971.

Sedro-Woolley Project Report No. 8, "A Year-Long Environmental Project" (for primary grades), Gloria Abrahamson, Huxley Center for Environmental Education, December 1971.

Sedro-Woolley Project Report No. 9, "An Approach to Environmental Education: A Three-Stage Program" (for intermediate grades), Ken Taylor, Huxley Center for Environmental Education, December 1971.

Sedro-Woolley Project Report No. 10, "Developing Environmental Awareness in a Fifth-Grade Class of 'Below-Average' Achievement Level," Dwight Hillier, Huxley Center for Environmental Education, December 1971.

Sedro-Woolley Project Report No. 11, "An Environmental Approach to Art" (for grades 7-8-9), Lavone Trueman, Huxley Center for Environmental Education, December 1971.

Sedro-Woolley Project Report No. 12, "Applications of Media for Environmental Education in the School," Steve Giordano and Paul Ellis, Huxley Center for Environmental Education, December 1971.

Sedro-Woolley Project Report No. 13, "An Interdisciplinary Program Incorporating Population Studies" (for intermediate grades), Edwin N. Jungblom, Huxley Center for Environmental Education, December 1971.

Sedro-Woolley Project Report No. 14, "An Environmentally Related Program for the Sixth Grade," Betty Crippen, Huxley Center for Environmental Education, December 1971.

APPENDIX D
EVALUATION OF ENVIRONMENTAL EDUCATION IN THE SEDRO-WOOLLEY SCHOOL DISTRICT

Because of its length, the evaluative report for this project, "Evaluation of Environmental Education in the Sedro-Woolley School District," by Patricia W. and Clifford E. Lunneborg of the University of Washington Bureau of Testing, is not bound into this final report, but is submitted with it as Appendix D.

APPENDIX E

A SELECTION OF NEWSPAPER COLUMNS WRITTEN FOR THE SKAGIT VALLEY HERALD

There is a great need that all of us, as citizens of our various communities, states, and of the United States, be informed of what is occurring in that arena of action and concern called the "ecology" movement. The process by which we learn the facts of the environmental situation and through which we learn to bring these facts together for action is called "environmental education." I sit down here, as a professional environmental educator, to do my part in facilitating learning and understanding about the environment by writing regularly of the problems, and solutions to the problems, in our environment.

Several things lead me to this effort. One reason I do it is because my educational efforts, as Director of the Sedro-Woolley Environmental Project (about which I will write more later), must go beyond the schools of that community to include the community itself. Schools, after all, do not exist in a vacuum. Another reason I sit here writing is that I know that a great effort for the development of environmental education in the public schools is beginning and seems to be focusing to some degree on the Northwest Washington region in general and the Skagit Valley in particular. The State of Washington is presently developing a state plan for environmental education and two of very few communities in the United States presently receiving large grants for work on environmental education are Sedro-Woolley and Mount Vernon. We have an unusual opportunity to grow and contribute to the future of education; the people of this region must be kept aware of what is happening in their schools so that they as well as their children and their environment can benefit from the work going on there.

A third reason for writing this column is to prevent the growth of any misunderstanding of the nature and purpose of the environmental education effort now beginning. A recent letter to the editor of this paper demonstrated the potential problem of misunderstanding that could arise. Such misunderstanding could jeopardize the constructive work that is now going on in our region, and I hope that we can avoid such a problem.

Finally, I write and work in this field because I am concerned about my future and that of our children and grandchildren. I am convinced that very bad times for all are ahead unless we take the time and make the effort to change our attitudes and behavior in this fragile world in which we live. We have no safe place to escape to so must treat that environment we now enjoy in a more "responsible" manner. To do so, of course, requires that we come to understand what we should and should not do and why, and that is environmental education.

Many readers may have questions of environmental significance that they wish to pose and some may wish to take me to task for what I say in these columns. Do not hesitate to ask your questions and make

your feelings known. Letters may be addressed to me personally or to the editor of this paper.

I am greatly looking forward to this adventure in environmental education. As the famous comic strip character Pogo so aptly put it: "we have found the enemy and he is us." Let us begin the task of conquering and reforming this enemy.

The Sedro-Woolley community has been granted the opportunity to play a leadership role in an arena of vital importance to our society. The United States Office of Education identified Sedro-Woolley as a fertile community in which to develop a pilot district environmental education program and granted her schools a sizable sum with which to begin the task.

"Why Sedro-Woolley?" you may ask. The reason is simple and remarkable. About a year ago the School Board adopted the following philosophical objectives.

A graduate of the Sedro-Woolley schools should:

1. Be aware of the dangers inherent in the population explosion.

2. Be aware of man's dependence on nature for all the necessities for physical survival, and be aware that man is the only creature capable of consciously altering his environment.

3. Value a quality environment over the immdiate possession of material goods and be aware that the production of material goods is dependent on the quality of the environment.

4. Be aware that an esthetic environment is essential to man's social and mental well-being. (Note: since the committee had considerable discussion of the word esthetic it was decided a definition should be included. The American College Dictionary defines it thus: Adj. 1. Pertaining to the sense of the beautiful or the science of esthetics. 2. Having a sense of the beautiful; characterized by a love of beauty; also aesthetic.)

5. Accept personal and individual responsibility for maintaining and restoring quality in his environment.

6. Be aware of legal and political avenues through which these objectives can be attained.

These objectives were drawn up by members of the local educational community, presented to the Board, and accepted. Shortly thereafter, two Sedro-Woolley teachers, Bob McCoy and Lee Mann, offered a course on environmental problems, a course designed specifically for teachers. This course was very well attended and enthusiastically received by teachers from communities throughout the area. Mann, in addition to this effort, has been

working under federal grants for several years developing visual approaches to environmental education. Then came Earth Day last April and the newly formed Environmentally Concerned Students (ECS) group from Sedro-Woolley put together an outstanding "celebration" that involved virtually the entire educational community.

Here was evidence that the Sedro-Woolley educational community was unusually committed and involved in a solid effort toward education of environmental "stewards," citizens anxious and ready to do right by themselves and their environment. This unusual degree of commitment came to the attention of officials working on the problem of developing this new process called environmental education, and they worked with Sedro-Woolley teachers and school administrators on a proposal. This proposal, entitled "A Regional Pilot Program for the Development of Environmental Education," was promptly funded by the U.S. Office of Education, the funds to be administered by Western Washington State College.

Sedro-Woolley has earned itself an opportunity. People from top to bottom of the educational hierarchy have come together, recognized a need, identified objectives, and developed a strong plan. Today the educational communities of the region and the state are watching the Sedro-Woolley Project, anxious to learn from the successes and failures of this "pioneering" effort.

What is the Sedro-Woolley Environmental Education Project designed to accomplish? What is this new experiment our children are being subjected to ? How will our kids be affected? These are questions now asked; here is an attempted beginning at an answer.

The Project hopes, over a period of at least three years, to design a curriculum, a course of study, that will develop in the student an awareness and understanding of the environmental bind in which the world now finds itself. It hopes to evolve an approach to learning that will give the student the problem-solving skills and understanding necessary to make the social, economic, political, technological, and critical decisions that will determine his environmental future. Participants in the Project hope further to develop through the kindergarten to twelfth grade educational experience a dedication in the young citizen to the difficult task of the rethinking and reworking of man's relationship to the environment of which he is a part.

More specifically, the Project is designed to evolve a method of retraining teachers to accomplish the above-mentioned objectives. Such a method is being carefully designed, recorded, tested, and evaluated at the present time. Another product of the effort will be injection of environmental concepts such as "living things are interdependent with one another and their environment," into the curriculum and development of appropriate methods for the learning of this and hundreds of other such concepts. We are not talking here of "adding on" to the existing curriculum, but rather of rethinking, revising, and modifying what we work with now in order to meet the objectives adopted by the School Board. To this

end teachers of English, Biology, Chemistry, first grade and eighth grade science, among others, are working in their subjects at their levels to produce learning materials and methods to accomplish project objectives. The fruits of their effort will, as the project continues, be published and exported to neighboring school districts.

It is important to remember that the Project is a pilot program, and effort to learn by success and failure, by effort and frustration, the what, the how, and even the why of environmental education. The project is not designed primarily for the benefit of Sedro-Woolley people, but for the benefit of education generally and of the school districts in Northwest Washington in particular. Its contributions to the educational experience in Sedro-Woolley will hopefully be considerable, but are secondary in intent.

Back in the 1840s a New Englander named Henry David Thoreau got permission from his friend Ralph Waldo Emerson to build a shack on Emerson's land at Walden Pond. He built it, and then retreated into the Massachusetts woodlands near Concord for a little over two years. Thoreau wanted to see how frugal he could be and built his shack for twenty-six dollars. He wanted freedom from financial considerations because he didn't want such complications interfering with his enjoyment of the solitude and beauty of the pond and with his thoughts. Thoreau's stay at the pond resulted in his most successful book, Walden, and in a beautifully written philosophy that means much to many people living today, more than a century after his death.

Henry David Thoreau wasn't running away from the world, but moved into the woods for the sake of simplicity, for the freedom to search and study himself and nature. He went there, as he put it, to work one day and rest six. Today Thoreau is, as he was during the latter part of his life, a controversial character. People identify him with the Sierra Club and preservation of nature and because they have little use for the Sierra Club and wilderness they have little use for Thoreau.

Such rejection is unfortunate because Thoreau speaks to all of us, whether we are Sierra Club members, conservationists, or something else. In Walden, his Journals, and his other works he writes with and of beauty, nature, man, life, simplicity, and other life things significant to all of us. He has something to offer us. Sierra Club people recognize this and have pushed his idea that "in wildness is the preservation of the world." This is significant, and I think it true, but he said much more.

Today we are suffering crises of values. We, or at least people among us, are having difficulty determining what constitutes success. Thoreau said something in Walden about this. "I learned this, at least, by my experiment; that if one advances confidently in the direction of his dreams, and endeavors to live the life which he has imagined, he will meet with a success unexpected in common hours." Even at the time that he wrote this, the success to which he referred, an inner confidence and

peace derived from thoughtful observation, could not be measured in monetary terms or according to prevailing values.

Does he speak to us today in our polluted, troubled world? Perhaps he does.

Some of us maintain that most of what is being said and written about the environment today misses the mark. Everyone is noting pollution here and pollution there--mucky water, sulphurous air, roadside trash, dead robins, extinct species, wanton roadbuilding, and so forth. There is a clear and indignant outcry about such symptoms. Where these indignant people miss the mark is in their presentation of these symptoms of environmental deterioration as the problem. These symptoms are each problems in themselves, but they are not THE problem.

The pollution and deterioration are symptoms of the real disease, which festers inside each of us. THE problem is in what we value, what we want in the world. If we value money and desire more of it for bigger houses and cars, more appliances and gadgets, then we seek more industry, more consumable resources, more development. Perhaps in search of more money and greater profit, we seek greater mobility and faster movement. We buy bigger and more powerful cars, build wider and more complex highway systems, build larger and faster jets. We pay the price of more air pollution, more rapid consumption of oil reserves; we gobble up more beautiful forest or producing cropland. We value money, an increasingly higher "standard of living," greater consumption, and for this we pay a price in environmental deterioration.

THE problem, then, is inside our heads--seated in the way we think, the values by which we live, the motivations that determine our behavior. We are not to be blamed for the nature of our desires. We inherited at least the foundations of them. We learned the value of progress and money and competition from our elders, our teachers, the books we read, and the heroes we admired. We are to be blamed, however, if we perceive the symptoms of our disease and refuse to diagnose it; if we fail to examine our personal values and those of our society and nation with a critical eye. Such blindness is like ignoring a thickening area on the breast. Perhaps we ignore the symptom because we are afraid we will discover the true nature of the problem, or because we do not have the time. The price we may pay if we ignore this thickening on the breast is death by cancer. The price we may pay by ignoring THE problem in our local, national, and world environment today may also be death, not only of our fellow organisms on this planet but of our society and even of our race.

I am greatly oversimplifying here but feel it essential to introduce the concept of values into our discussions. The only definitive solution to our environmental problems will be an altering of values in response to need, will be changes in attitude and behavior deemed necessary to avoid the crunch. I am not of the doomsday school of thought on this

matter. I think we can avoid breakdown of our environment if we are willing, but we must risk discomfort and analyze the values, premises, and attitudes that govern how we behave.

One morning last week I dropped by Mary Purcell School in Sedro-Woolley to observe and photograph the "Save A Tree" project that this school was excitedly working on. Just to my left as I entered the front door I noticed a pile of newspapers stacked against the wall. Also to the left as I passed into the corridor were three huge red thermometers that children and teachers had drawn graphically depicting the weight of the paper that had been gathered. Gross weight collected at that time was over 10,000 pounds of paper. Paper was stacked everywhere in the school and while I was there students and teachers loaded a truck to transport the paper up to Georgia-Pacific for recycling.

The striking thing about this project was the involvement of a large group of students and teachers. High School boys provided muscle to load the truck. The school principal, teachers, and dozens of boys and girls rolled up their sleeves and carried paper out to the truck. A group of Junior High students, working on a film on recycling, hovered about with still and movie cameras, recording the event. Here was truly a community education project.

"So what's educational about collecting paper?" you may ask. "I used to do that when I was a Boy Scout." Undoubtedly you did, because paper drives have recycled paper for years, but why did you do it? Probably for money to support your organization. The Mary Purcell "Save A Tree" project evolved in order that children might learn to understand the relationship between paper and a tree. The primary motive was not money but knowledge, and trees. For a brief time this little project changed the educational environment. Parents, students, teachers, and administrators worked together and the many students involved learned something about cooperation, organization, recordkeeping, industrial recycling, paper, trees, and money.

One little girl looked puzzled. "Do you know where paper comes from?" her teacher asked. "From cotton plants," she replied. "Well perhaps some of it comes from that, but most paper comes from trees," her teacher pointed out. Suddenly the child understood what was going on, why all this fuss and bother about paper was occurring. Paper is made from trees, waste paper can be reprocessed into good paper, and the supply of trees can be perpetuated. She practically lighted up with the realization, and set off to do her part. The situation had created for her a "learnable moment," a moment of discovery and understanding.

This "Save a Tree" project, while largely spontaneous, is an indication that the effort being put into the Sedro-Woolley Environmental Project is reaping some return. Laurie Lundgren, the teacher who started the paper snowball in motion, has been at work all year searching for ways

to stimulate exciting and environmentally significant learning in her classroom and school. She obviously hit upon a way, but her work is by no means over. She has involved her students and fellow teachers. Now how will she follow this up? Her work has only begun. The recycling project provides an excellent springboard into learning about trees as organisms, the uses of trees other than paper, tree farming, the role of trees in the water and carbon cycles, and many other things. If the "Save a Tree" project ended now it would have been a significant learning experience for many youngsters, but follow-up is essential and this is only the beginning.

The school, an old and revered institution with which we are each intimately acquainted through long personal experience, needs much critical examination. It is the focus of much controversy. My task is to study the school as an institution in order to learn how it serves in developing environmental attitudes. As a result of these studies, and in light of knowledge recently derived from the study of ecology, psychology, and other subjects, I experiment with changes in the school that will result in a more ecologically sound way of life than that which education has produced in the past. My task, in short, is to study potential directions that educational reform may take, reform as a response to a deteriorating environmental situation.

One thing I have observed in some quarters this year and in the past is an attitude that becomes evident in conversations like the following:

Johnny comes home from school, crashes his bike down on the bank in the backyard, and runs into the house.

"Hi, Johnny," says mother, "did you have a good day in school today?"

"Sure did, Mom, What's for supper?"

"What'd you do?"

"Where?"

"In school."

"Oh, we took a trip. We walked around town all morning and looked at houses and streets and things. Then we went back to the school. What's for supper?"

"You looked at houses? My, what's going on in those schools, anyhow? Last week you took a bicycle trip; the week before that you went hiking. Do you ever do any work?"

"Naw. What's for supper?"

Later, over dinner, Mother observes that schools aren't what they used to be. Dad agrees. When he was in school, he points out, they worked. Now they're playing around too much. He sends Johnny to school to work, to learn, not to play around on hikes and walking around town. He'll have to go to the next school board meeting and find out about this.

Johnny comes home from school and has enjoyed himself and this, to some parents, is cause for concern. School isn't supposed to be fun. School is work and work isn't fun--and don't you forget it, Johnny. Not only that, schooling takes place in the classroom and all of this wandering around takes the children away from their books and from their learning. Mom and Dad think the school and the teachers are falling down on the job.

Unfortunately, too few parents have the time, or the interest, to find out what is going on in the schools. Unfortunately also, too few teachers have the time, or the interest--or the courage--to encourage the parents to find out. The result: when a teacher tries a new, innovative, and enjoyable technique, Mom and Dad misunderstand the intent of the experience. They think the teacher is "goofing off" and Johnny isn't learning what he should be. Maybe he is and maybe he isn't, but they don't really know.

Parents should, it seems to me, know and understand what is happening in the world of public education. They trust the critical task of education to professionals trained to do this job and shouldn't expect to control how these professionals do their work, but they should, it seems to me, be trying to understand the educative process in order to better understand their children. Ways to educate parents about the education their children are receiving need to be devised. Changes in the educational environment and the significance of these changes need to be communicated to parents. The PTA as a means of bringing the community and its schools together seems to be about dead. I have spoken to a few PTA groups this year. Attendance at meetings has been low and exchange of ideas slight. A new means of student-teacher-parent-community leader exchange seems to be called for. John Gardiner has said, "We all know in our bones that over the long haul what we do in education has the greatest relevance to building the kind of society we want." Our society needs to become more aware of education and where it is going today.

Today I am writing as Director of the Sedro-Woolley Environmental Education Project and I would like to urge the citizens of this community to support their schools in the upcoming levy vote. Passage of this levy is of the utmost significance to the children and teachers of the community and to the Environmental Education Project. If it does not pass, many teachers, perhaps as many as thirty, will lose their jobs; the remaining teachers will have to teach more students with inevitable loss of educational quality for the children, and the Environmental Education Project will be dealt a severe blow when six key teachers in whom much training and federal money has been invested will be released.

I understand that there is a misconception in some people's minds regarding the levy. "We just voted a lot of money last fall," they say. "How come they need more now? With my tax load I just can't keep pouring money into the schools. They'll have to do with what we gave them last fall." The misconception lies in the fact that the money voted last fall was a bond issue and must go to construction of new school buildings. The levy this spring is for operation; for expenses incurred in day-to-day operation over the amount allocated by the state. If the levy does not pass the operation will be reduced with less benefit to the children.

The United States Office of Education has invested in Sedro-Woolley in order to develop environmental education. Hopefully the work done here will be of regional, state, and even national significance. The potential is there. This community was one of two selected last year for work in this area because of the commitment of its teachers to education in general and to environmental education in particular. I have worked with these teachers and their students for eight months now and have found them a terrific group of dedicated people. They have their human foibles like all the rest of us, but they are doing excellent work and it looks as if your investment, through the U.S. Office of Education, has been justified. If the levy passes we can proceed with our work and the quality of education that our children receive will be increased. The quality of their educational environment will grow, as will, hopefully, the quality of the environment in general.

I urge you to get out and vote positively on this levy. I can think of no more important investment than in the quality of education experience that your children receive. It's your choice, of course, but a positive vote will be a step forward for the community and a negative vote or no vote at all will be a step backward.

HUXLEY COLLEGE
Center for Environmental Education

THE ONGOING SEMINAR

Number 1, November 1971

Since this is the first issue of The Ongoing Seminar, it is felt that some explanation of purpose should be included. This summer was quite an educational experience for me, and I think for most of those involved. Just as we were getting to know each other, the quarter was over and we all went back to our respective homes. It is the purpose of this publication to help us keep in touch with each other and provide a viable means of communication for those seminar participants. We solicit and welcome all personal contributions, be they abstracts of articles, book reviews, methods studies, personal comments or individual classroom experiences that could be helpful to others. I hope that this newsletter will be a valuable EE resource for everyone.

-- Linda Paris

Tom Nelson sent us a contribution from his base in Nebraska. We had to edit it a bit to keep our length down, but here's the gist of it.

ARE ECOLOGICAL MALTHUSIANS DANGEROUS?

One of the ideas current in ecology is Malthus' ideas about resources, population, etc. The basic argument is espoused by people like Ehrlich and he may turn out to be the one person who will harm the ecological movement more than help it. I respect his concern, but his ideas and method of approach I find to be counter-productive.

His basic method is sensationalism; he scares people. You probably noticed that he was on all the TV talk shows about a year ago, but I have not seen him lately. His effect was basically sensational and therefore had no long-term effect. Witness Ralph Nader: he is constantly on TV because he blends his own brand of sensationalism with documentation, and is also working within the structure to get effective change. The whole ecology movement is in danger of becoming sensationalized, and therefore ignored.

Now how is this related to Malthus? I think that Malthusian assumptions are simplistic and therefore tend to become the symbol of the ecology movement. The unfortunate thing is that most people, ecologists included, don't realize that their arguments are based on Malthusian assumptions. The basic assumptions are:

1. Population grows at a geometric rate.
2. Food grows at an arithmetic rate.
3. Resources are fixed and consumable.

From these assumptions the following conclusions are drawn:

1. Food per person will eventually decline because the number of people is increasing faster than the food supply; hence starvation is inevitable.
2. Eventually all resources will be consumed, and the material standard of living will decline.
3. When this decline in food and resources begins the have-have not gap will be accelerated, producing world tensions and eventually world war with the ultimate destruction of civilization.

Now what do these assumptions and conclusions force the ecological Malthusians to propose as alternative policies?

1. Immediate population control throughout the whole world, especially in underdeveloped countries like India.
2. Reduction of the energy consumption of advanced countries.
3. Allowing massive starvation in order to reduce the population, if the situation becomes bad enough.
4. Discontinuance of the use of all chemicals being added to the environment; e.g., herbicides, pesticides.

Now I would like to explore why all these assumptions, conclusions, and policies are not only partly true, but if we proceed on this basis (which we won't) things will get worse instead of better. I state my counter-arguments below. Basic assumptions are:

1. Population will level off. The only acceptable form of stability in history has occurred when society became industrialized.
2. Food production is limited by the influx of solar energy. Using hydroponics cultures we could probably feed about twenty billion before this system would be taxed.
3. Certain resources can be degraded, e.g., oil, coal, gas, but they are never consumed.

Conclusions are:

1. The food per person ratio can be made adequate to eliminate all starvation because of industrialization.
2. Certain resources may be degraded (oil, coal, gas), but other substitute energy forms exist eventually, including the sun, which is non-polluting. All materials can be recycled so these will not be exhausted.
3. The have-have not gap could be closed very rapidly. (But will it? We have the resources, but do we have the will?)

Policies:

1. Begin an immediate attempt to industrialize, and this will solve the population problem which will never be solved by some birth control program alone.
2. Counter increased energy consumption of societies. (The energy consumption of societies will increase; the best counter-measure is increased efficiency and alternate energy sources that are non-polluting; that is, solar energy.)
3. Before situations become even worse, do something to make it better.
4. Constantly monitor pollution and perform additional research, with the idea of tougher and tougher controls, the eventuality being a worldwide pollution and resources council to coordinate all these activities.

The future is what we will it to be. If we believe doom is for certain, then doom will come. If we believe that all the world can live together, then that can be done. Man now has the power of God to rule benevolently; he must develop the will to use this power for the good of man.

-- Tom Nelson
McCook, Nebraska

ABSTRACT
Working Paper #40 - Environmental Education in the Elementary Schools: Needs and Specifications

This paper presents a description of needs and specifications for research and development activities in elementary school science. Consideration is given to the current and future needs of the child and the society of which he is a member. An overview of deficiences in current practice is followed by a plan for development and related research activities which will provide an environmental education for elementary school children. Several alternatives for developing materials in this area of EE are described; strengths and weaknesses of each are indicated. A developmental sequence is detailed for one alternative--Ecological Readers. The necessity of cooperative arrangements among school personnel, universities, governmental agencies, and private industry is indicated.

Available from: The Wisconsin Research and Development Center for Cognitive Learning, University of Wisconsin, Madison, Wisconsin 53706

ABSTEACT
Two Contrasting Educational Models: Applications and Policy Implications. September 1970.

This memorandum begins with the notion that schools have lost touch with the times. Schools appear to have become increasingly dysfunctional and

out of harmony with the shifting values and trends of the environment that surrounds them and the institutions they overlap. Consequently, it is imperative that the basic premises which underlie current educational practice be articulated and reassessed. This paper outlines in detail and contrasts in a dialectical interplay two belief systems--one emphasizing openness, the other structure. Values and latent dangers of these two diverse sets of underlying assumptions are presented, followed by description of educational experiences that follow from these basic beliefs. The two belief systems are examined relative to a wide variety of current educational issues to illustrate the extent to which different basic assumptions influence how educational problems are conceptualized and approached. The alternative systems are also projected against a broad socialization perspective, which reveals diverse consequences for human development and society. The last section lays out the implications for educational policy of this analysis of the two world views.

Available from: The Educational Policy Research Center, Stanford Research Institute, Menlo Park, California 94025

ABSTRACT
"The 70's--Decade of Environmental Decision (Education and Action Guidelines)

This report takes the position that today science and technology have the capability to solve today's environmental problems, but society's customs, oversights, religious beliefs, political expediencies (and social "desirability") have kept us from making wise decisions. It is therefore necessary to integrate an understanding of economics, history, political science, sociology, psychology, and the humanities, as well as the hard sciences, into a cohesive EE program. Environmental education is defined and principles are outlined. Discussion of EE problems and curricula are presented. A large section is devoted to student and community action involvement.

Available from: The Environmental Science Center, 5400 Glenwood Avenue, Minneapolis, Minnesota 55422

ABSTRACT
Environmental Education--Education That Cannot Wait

This booklet gives a good overview of the U.S. government's position on EE. The first section deals with defining EE and its relationship to modern society. The aims and values of EE (from the government's position), along with a brief summary of man's present environmental condition, are detailed.

The second section deals with various approaches to EE. Curriculums and school roles are discussed and there may be several helpful suggestions there.

The third section gives a look toward the future of EE. Together, this

booklet gives a broad description of EE along with some of the reasons for the urgent need for it in today's schools.

Available from: The Office of Health, Education, and Welfare, Washington, D.C.

ABSTRACT

"Toward Master Social Indicators," Research Memorandum #6747-RM-2

This study proposes a heuristic model of society consisting of hierarchically arranged elements leading from the "general good" at the top to highly fragmented indicators and data at the bottom. A technique to measure "quality of life" at each level is outlined. It is shown that data essential to such measurements are missing. The report ends by outlining a comprehensive national social data system that ultimately should permit the construction of reliable master social indicators.

Available from: The Educational Policy Research Center, Stanford Research Institute, Menlo Park, California 94025

All of the above materials that are abstracted are available free of charge from the addresses listed.

Other Available Reports, also free of charge (send to us for them):

"A New Role for American Education," Office of Education, Department of Health, Education and Welfare, Washington, D.C.

"Teaching More With Less," Noel McInnis, Center for Curriculum Design, Evanston, Illinois.

We also have extensive working bibliographies, compiled by Miles, on "History as/of Environmental Education," and "Environmental Perception." These are available on request.

HAPPENINGS OF NOTE

Miles went to Washington, D.C., right after summer school and worked on O.E.'s proposal guidelines. These guidelines should be distributed in November with grant requests falling due during February. There are some changes from last year, though the general categories for funding remain the same. The word is that there is as much as $14 million to be distributed during the coming grant period through O.E.'s Environmental Education Office. Request the new "Handbook on Preparing Proposals" from Dr. Paul Cromwell, 4525 Regional Office Building, 7th and D Streets, S.W., Washington, D.C.

If you are planning a teacher workshop in EE, study the workshop environment carefully and critically beforehand. On October 15, Sargo, Miles,

Floyd, and company held a professional day workshop in EE for teachers that was attended by 165 aspiring environmental educators. The morning session was somewhat of a disaster due to the poor acoustics and cold temperature of the environment. The afternoon provided a good contrast in environmental dynamics and was very successful. Write us if you would like the workshop format.

Several publications of the Sedro-Woolley Project are complete. You may write and request these if you feel they would be useful to you. Please send a donation to help defray the expense of duplicating and mailing. The available reports are:

"A Save Our Trees Project," Lundgren, for primary grades.

"A Study of Patterns and Tree Succession as Environmental Education," Floyd, intermediate grades.

"An Environmental Approach to Eighth Grade Science," Sargo, junior high grades.

"The Project Physics Course (Modularized)," Flint, grades 10-12.

The ranks of our "group" are growing. Seventeen Huxley students are working in Huxley 371, and twenty people from Burlington, Sedro-Woolley, Mount Vernon, and Ferndale are engaged in a workshop in Burlington this fall. We anticipate a workshop in Anacortes during the winter.

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The Ongoing Seminar is an attempt at communication and cooperation. We hope to keep all of us who are working in environmental education in touch with each other and to provide a means of sharing what we are doing in this field. This first issue leaves much to be desired and we need contributions from you out there that will help others develop themselves as environmental educators. Please send contributions such as book reviews, curriculum ideas, article abstracts and summaries, or whatever. If you develop a learning package unit or such, sent it to us. If we judge it worthwhile we will "publish" it for you, describe it in the Seminar, and distribute it to interested people on request. We think this has great practical possibilities and if you have anything going, help us out. A small donation to help pay duplication and mailing costs will be appreciated.

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A THOUGHT FOR THE DAY

"Ecology is the science which warns people who won't listen about ways they won't follow of saving an environment they don't appreciate."

79 -- L. G. Heller (N.Y. Times)